
**FINAL REPORT ON THE CHENAB COLONY
SETTLEMENT.**



Revised list of Agents for the sale of Punjab Government Publications.

IN THE UNITED KINGDOM.

CONSTABLE & Co., 10, Orange Street,
Leicester Square, London W. C.

KEGAN PAUL, TRENCH, TRÜBNER & Co.,
Limited, 68-74, Carter Lane, E. C.,
and 25, Museum Street, London,
W. C.

BERNARD QUARITCH, 11, Grafton Street,
New Bond Street, London, W.

T. FISHER UNWIN, No. 1, Adelphi
Terrace, London, W. C.

P. S. KING & SON, 2 and 4, Great
Smith Street, Westminster, London,
S. W.

H. S. KING & Co., 65, Cornhill, and 9,
Pall Mall, London.

GRINDLAY & Co., 54, Parliament Street,
London, S. W.

W. THACKER & Co., 2, Creed Lane,
London, E. C.

LUZAC & Co., 46, Great Russell Street,
London, W. C.

B. H. BLACKWELL, 50 and 51, Broad
Street, Oxford.

DEIGHTON, BELL, & Co., Limited, Cam-
bridge.

OLIVER & BOYD, Tweeddale Court,
Edinburgh.

E. PONSONBY, Limited, 116, Grafton
Street, Dublin.

ON THE CONTINENT.

ERNEST LEROUX, 28, Rue Bonaparte,
Paris, France.

MARTINUS NIJHOFF, The Hague, Hol-
land.

IN INDIA.

A. CHAND & Co., Imperial Book Depôt
Office, Delhi.

GULAB SINGH & SONS, Mufid-i-'Am
Press, Lahore.

MANAGER, Punjab Law Book Depôt,
Anarkali Bazar, Lahore.

S. MUMTAZ ALI & SON, Rafah-i-'Am
Press, Lahore (for Vernacular publi-
cations only).

RAMA KRISHNA & SONS, Book-sellers
and News Agents, Anarkali Street,
Lahore.

N. B. MATHUR, Superintendent and
Proprietor, Nazir Kannon Hind Press,
Allahabad.

D. B. TARAPOREVALA SONS & Co., Bom-
bay.

THACKER, SPINK & Co., Calcutta and
Simla.

NEWMAN & Co., Calcutta.

R. CAMBRAY & Co., Calcutta.

THACKER & Co., Bombay.

HIGGINBOTHAMS, Limited, Madras.

T. FISHER UNWIN, Calcutta.

V. KALYANARAM IYER & Co., 189,
Esplanade Row, Madras.

G. A. NATESAN & Co., Madras.

SUPERINTENDENT, AMERICAN BAPTIST
MISSION PRESS, RANGOON.

FINAL REPORT
ON THE
CHENAB COLONY SETTLEMENT

BY

B. H. DOBSON, ESQUIRE, I.C.S.,

Settlement Officer.




L a h o r e :
PRINTED BY THE SUPERINTENDENT GOVERNMENT PRINTING, PUNJAB.
1915.

TABLE OF CONTENTS.

Para.	Subject.	Page.
	INTRODUCTORY.	
1	The contents of the report	1
2	The assessment circles	2
	CHAPTER I.—HISTORY OF THE COLONY.	
	<i>A—The period of colonization, 1892—1906.</i>	
3	The Colony area	3
4	Objects and principles of colonization	<i>ib.</i>
5	Selection of colonists	4
6	Peasants—(i) immigrant—(ii) nomad—(iii) Hithari	5
7	Yeomen	<i>ib.</i>
8	Capitalists	<i>ib.</i>
9	Auction purchasers	<i>ib.</i>
10	Military grantees	6
11	Service grantees—(i) camel service—(ii) mule-breeding—(iii) tree-planting.	<i>ib.</i>
12	Colonization of the Rakh Branch (1892—1896)	7
13	Colonization of the Jhang Branch (1896—1898)	8
14	Colonization of the Gugera Branch (1899—1902)	9
15	Colonization of the Extensions (1903—1905)	<i>ib.</i>
16	The evolution of the village site	10
17	In peasant <i>mauzas</i>	<i>ib.</i>
18	In <i>nazarana mauzas</i>	11
19	<i>Charagah</i>	<i>ib.</i>
20	Legislation	12
21	Administrative changes	<i>ib.</i>
	<i>B.—Period of executive and legislative change, 1907—1912.</i>	
22	Introductory	12
23	Grievances of the Colony population : (i) the system of fines—(ii) dissatisfaction with colony conditions—(iii) distribution of water.	13

Para.	Subject.	Page.
24	The Colony Bill of 1907	14
25	The Colonies Committee of 1907	<i>ib.</i>
26	Decision to confer proprietary rights on peasant grantees—in residential sites as well as agricultural land	15
27	Conditions pertaining to the acquisition of proprietary rights	<i>ib.</i>
28	Effects of the decision	16
29	Scope of the legislation proposed	<i>ib.</i>
30	The Colony Act of 1912	17
31	Ground rent and sanitary reward grants	<i>ib.</i>
	<i>C.—The latest phase, 1912-1914.</i>	
32	Introductory	17
33	Exchanges	18
34	Future policy concerning exchanges	<i>ib.</i>
35	Mule-breeding grants	<i>ib.</i>
36	Arboriculture and the abolition of tree-planting grants	19
37	Disposal of unallotted land	<i>ib.</i>
	CHAPTER II.—THE LOWER CHENAB CANAL.	
38	History of the project	20
39	The headworks	<i>ib.</i>
40	Branches	21
41	Distributaries and watercourses	<i>ib.</i>
42	Capacity and discharge	<i>ib.</i>
43	Escapes	22
44	<i>Waribandi</i>	<i>ib.</i>
45	The Irrigation boundary	23
46	Silt—the problem of silt clearance—remedial measures	<i>ib.</i>
47	Area proposed for irrigation	24
48	Policy of Government	25
49	Present position as regards the area proposed for irrigation	<i>ib.</i>
50	Subsoil water-level	26
51	Water-logging: its dangers and remedies	28
52	Statistics of irrigation	29

Para.	Subject.	Page.
53	Inadequacy of the system of record	29
54	Excess and defect in supply	30
55	Present administrative policy	<i>ib.</i>
56	Modules—Gibb's—Kennedy's	31
57	The future of modules	<i>ib.</i>
58	Outlet reduction	32
59	Suggestions for the equalization of supply	<i>ib.</i>
60	Occupier's rates—the Lower Schedule	33
CHAPTER III.—THE COLONY POPULATION.		
<i>A—Census statistics.</i>		
61	Population—immigrant—indigenous	34
62	Sex distribution	35
63	Language	<i>ib.</i>
64	Occupations	36
<i>B.—Distribution of land by castes.</i>		
65	Introductory	36
66	Jat Hindus—23·67 per cent.	37
67	Jat Sikhs as cultivators	<i>ib.</i>
68	Jat Hindus—origin by districts	38
69	The Sikh community	<i>ib.</i>
70	Jat Musalmans, 12·31 per cent.	39
71	Jat Musalmans—origin by districts	<i>ib.</i>
72	Arains, 10·7 per cent.	<i>ib.</i>
73	Arains as cultivators	40
74	Arains—origin by districts	<i>ib.</i>
75	Rajputs, 3·27 per cent.	<i>ib.</i>
76	Kambohs, 3·01 per cent.	41
77	Pathans, 1·43 per cent.	<i>ib.</i>
78	Gujars, 1·22 per cent.	42
79	Sainis, ·87 per cent.	<i>ib.</i>
80	Christians, ·61 per cent.	<i>ib.</i>

Para.	Subject.	Page.
81	Miscellaneous Hindus, 4.3 per cent.	42
82	Miscellaneous Musalmans, 2.51 per cent.	43
83	Departmental allotments, .7 per cent.	ib.
84	Hindu Hitharis—(i) Jat Sikhs, 1.6 per cent.—(ii) Aroras, .78 per cent.—(iii) Mazbhis, .63 per cent.	ib.
85	Musalman Hitharis—(i) Rajputs, 3.54 per cent.—(ii) Jats, 1.76 per cent.—(iii) Sayyads and Qureshis, 2.06 per cent.	44
86	Jangli characteristics	45
87	Kharrals, 3 per cent.	ib.
88	Wattus, .95 per cent.	ib.
89	Chaddhars, .85 per cent.	46
90	Bhattis, .60 per cent.	ib.
91	Khichis, .59 per cent.	ib.
92	Miscellaneous Janglis, 12.65 per cent.	ib.
93	Balochis, 5.25 per cent.	47
 CHAPTER IV.—AGRICULTURAL CONDITIONS.		
<i>A.—Markets and communications.</i>		
94	Railways	47
95	Markets	ib.
96	Roads	48
97	Carts	49
98	Disposal of produce	ib.
<i>B.—Rainfall.</i>		
99	Rainfall	49
100	Statistics of rainfall	50
<i>C.—Livestock.</i>		
101	Cattle breeds and breeding	51
102	Import and export of cattle	ib.
103	Dairying	52
104	Sheep and goats	ib.
105	Camels	ib.
106	Horses and mules	53
107	Donkeys	ib.

Para.	Subject.	Page.
	<i>D.—Soil.</i>	
108	Classes of soil	54
109	The formation of <i>kallar</i>	55
110	Remedies for <i>kallar</i>	56
111	Mr. Barnes' experiments	<i>ib.</i>
	<i>E.—Cultivation.</i>	
112	Introductory	56
113	Implements of agriculture	57
114	Sowing	<i>ib.</i>
115	Use of manure	58
116	Methods of manuring	<i>ib.</i>
	<i>F.—Crops.</i>	
117	Introductory	58
118	Wheat, 44·4 per cent.—varieties of wheat	60
119	<i>Toria</i> , 10·8 per cent.	<i>ib.</i>
120	Cotton, 8·4 per cent.—quality of Colony cotton	<i>ib.</i>
121	Gram, 5·4 per cent.	61
122	Maize, 4·7 per cent.	<i>ib.</i>
123	Sugar, 2 per cent.	<i>ib.</i>
124	Rice, 5 per cent.	<i>ib.</i>
125	Fodder crops, 17·1 per cent.	62
126	Miscellaneous crops	<i>ib.</i>
127	Seed selection	<i>ib.</i>
128	Rotation of crops	<i>ib.</i>
129	Examples of rotation	63
130	<i>Kharif</i> and <i>rabi</i> —causes of the preference for <i>rabi</i> crops	<i>ib.</i>
	<i>G.—Tenancies.</i>	
131	Introductory	64
132	Yeomen, capitalists and auction purchasers	65
133	Peasants	<i>ib.</i>

Para.	Subject.	Page.
	<i>H.—Rents.</i>	
134	<i>Khudkasht</i>	66
135	Produce rents	<i>ib.</i>
136	Cash rents—in auction purchaser, capitalist and yeoman holdings—in peasant holdings	67
137	Inferences from statistics of cash rents—returns of auctions—cash rents on the Rakh Branch	<i>ib.</i>
	CHAPTER V.—FISCAL HISTORY.	
	<i>A.—Assessment of Agricultural Land and Government waste.</i>	
138	Pre-Colony assessments	69
139	<i>Tirni</i> in Jhang	<i>ib.</i>
140	<i>Tirni</i> in Montgomery	<i>ib.</i>
141	<i>Tirni</i> in Gujranwala	70
142	Well assessments in Jhang	<i>ib.</i>
143	Assessment of cultivated lands in Montgomery	<i>ib.</i>
144	Assessment of <i>kasht barani</i>	<i>ib.</i>
145	Early Colony assessments—occupier's rate—owner's rate—land revenue— <i>malikana</i> —cesses	<i>ib.</i>
146	Date of allotment	72
147	Free crops	<i>ib.</i>
148	Later assessments in proprietary villages	<i>ib.</i>
	<i>B.—Land Revenue in Towns.</i>	
149	Introductory	73
150	Rates of land revenue in urban areas	<i>ib.</i>
151	Cesses	<i>ib.</i>
152	Term of the present assessment	74
	<i>C.—Ground Rent.</i>	
153	The system described	74
154	Its merits and defects	<i>ib.</i>
155	Its abolition	75
	CHAPTER VI.—THE REASSESSMENT OF AGRICULTURAL LAND.	
	<i>A.—Introductory.</i>	
156	The system of assessment	75
157	Its main principles	<i>ib.</i>

Para.	Subject.	Page.
	<i>B.—Classes of cultivation.</i>	
158	Introductory	76
159	<i>Chahi</i>	<i>ib.</i>
160	<i>Barani</i>	77
161	<i>Sailab</i>	<i>ib.</i>
162	<i>Abi</i>	<i>ib.</i>
	<i>C.—Assessment of Nahri cultivation.</i>	
163	Introductory	77
164	Assessment of <i>nahri</i> cultivation	78
165	Half assets estimate deduced from rents in kind	<i>ib.</i>
166	Rates of yield	<i>ib.</i>
167	Prices	80
168	<i>Kamins'</i> dues—percentages deducted	81
169	Present position of <i>kamins</i>	82
170	Half net assets and revenue rates	83
171	Differentiation of the revenue rate	<i>ib.</i>
172	Merits of the system of differentiation	84
173	Classification of <i>nahri</i> land	<i>ib.</i>
174	Assessment of <i>nahri-jallari</i> land	85
175	Occupier's rate	<i>ib.</i>
176	Owner's rate	<i>ib.</i>
	<i>D.—Malikana and Cesses.</i>	
177	<i>Malikana</i>	86
178	Cesses	<i>ib.</i>
	<i>E.—The system of Kharaba.</i>	
179	The system of holding-to-holding <i>kharaba</i> —its merits and defects	86
180	Findings of the Simla Committee of 1910	<i>ib.</i>
181	Present position as regards holding-to-holding <i>kharaba</i>	87
182	Other <i>kharaba</i> remissions	<i>ib.</i>
183	Current procedure as regards <i>kharaba</i> summarized	<i>ib.</i>
184	<i>Nabud</i> and <i>talaf</i> crops	89
	<i>F.—Exemptions from Land Revenue charges.</i>	
185	Allotments to the Army Remount department, Cavalry Regiments, Agricultural and Irrigation departments	89
186	The case of camel service grantees	<i>ib.</i>

Para.	Subject.	Page.
	<i>G.—The Agency of Assessment.</i>	
187	Inside the Irrigation boundary	90
188	Outside the Irrigation boundary	<i>ib.</i>
	<i>H.—Reception of the new Assessment.</i>	
189	Objections and appeals	91
	<i>I.—Financial Results.</i>	
190	Financial results ; land revenue—cesses and <i>malikana</i>	93
	<i>J.—Term of Settlement.</i>	
191	Term of Settlement—for the Rakh Branch circle—for the Jhang and Gugera Branch circles, Extensions and Proprietary villages	94
192	Provision for fixed assessments	<i>ib.</i>
	CHAPTER VII.—THE REASSESSMENT BY CIRCLES.	
	<i>A.—Jhang Branch, Circle I.</i>	
193	Jhang Branch, circle I	95
	<i>B.—Jhang Branch, Circle II.</i>	
194	Jhang Branch, circle II	96
	<i>C.—Jhang Branch, Circle III.</i>	
195	Jhang Branch, circle III	97
	<i>D.—Gugera Branch, Circle I.</i>	
196	Gugera Branch, circle I	98
	<i>E.—Gugera Branch, Circle II.</i>	
197	Gugera Branch, circle II	99
	<i>F.—The Rakh Branch Circle.</i>	
198	The Rakh Branch circle	100
	<i>G.—The Extensions and Proprietary villages.</i>	
199	Introductory	101
200	Reassessment of the Extensions	102
201	The Dangali Extension	103
202	The Nahra Extension	<i>ib.</i>
203	The Nupewala Extension	<i>ib.</i>
204	The Bahlak Extension	<i>ib.</i>
205	The Killianwala Extension	<i>ib.</i>
206	The Bhangu Extension	<i>ib.</i>
207	The Proprietary villages	104

Para.	Subject.	Page.
CHAPTER VIII.—SURVEY AND RECORD.		
208	The square system	105
209	<i>Killabandi</i>	<i>ib.</i>
210	Advantages of <i>killabandi</i>	<i>ib.</i>
211	Remeasurement	106
212	Preparation of the record-of-rights	<i>ib.</i>
213	The record-of-rights in allotted land	<i>ib.</i>
214	The record-of-rights in village sites	107
CHAPTER IX.—MISCELLANEOUS.		
215	Dates for collection of the new demand	107
216	The double staff of <i>patwaris</i>	108
217	Future assessment by tahsils	<i>ib.</i>
218	The experimental introduction of fixed assessments	<i>ib.</i>
219	Assessment of Gangapur (<i>mauza</i> 591, Gugeru Branch)	110
220	Notice of officers	<i>ib.</i>
221	Personal acknowledgments	111
222	Orders required	<i>ib.</i>
	Glossary	1—4
APPENDICES.		
	I. — <i>Mauzas</i> included in each assessment circle with the dates for the imposition of the new demand.	i
	II.—Occupier's rates—	
	<i>A.</i> —In proprietary <i>mauzas</i>	v
	<i>B.</i> —In Colony <i>mauzas</i>	vi
	<i>C.</i> —For water employed otherwise than in Irrigation	<i>ib.</i>
	<i>D.</i> —Special provisions	vii
	<i>E.</i> —Lower schedule applicable to selected Colony <i>mauzas</i>	<i>ib.</i>
	<i>F.</i> —List of <i>mauzas</i> admitted to Schedule E	viii
	III.— <i>A.</i> —Rules for the assessment of fluctuating land revenue, <i>malikana</i> and cesses within the Irrigation boundary of the Lower Chenab Canal by officers of the Irrigation department.	ix
	<i>B.</i> —Rules for the assessment of fluctuating land revenue and cesses outside the Irrigation boundary of the Lower Chenab Canal by Revenue officers.	xi
	<i>C.</i> —Form of <i>Fard Bachh</i> to be prepared by <i>patwaris</i> on the completion of <i>khataunis</i> .	xvi
	IV.—Principal Gazette notifications	xvii
	Map	



सत्यमेव जयते

No. 2247 (Rev. & Agri.—Rev.).

FROM

THE HON'BLE MR. H. D. CRAIK, I.C.S.,
*Revenue Secretary to Government,
Punjab and its Dependencies,*

TO

THE SENIOR SECRETARY TO THE FINANCIAL
COMMISSIONERS, PUNJAB.

Dated Lahore, 1st February 1917.

Revenue and Agriculture.

Revenue.

SIR,

I AM directed to acknowledge the receipt of Mr. Dobson's final report on the settlement of the Lower Chenab Colony together with a note by Sir Michael Fenton, received with your letter No. 31, dated 10th January 1916, and to convey the following remarks and orders of the Lieutenant-Governor.

2 Mr. Dobson's report constitutes the last page in the history of the Lower Chenab Colony as such. The process of allotment having been finally completed, the colony has now reached a stage of development which brings it on to a level with the older districts of the province. Its exclusion in future from the scope of the annual report on colonisation operations has been approved by the Government of India, and there is no longer any occasion to consider it as an administrative unit distinct from the various districts in which its component parts are situated. Mr. Dobson's report suitably contains much that is ordinarily reserved for a gazetteer and presents a graphic and comprehensive account of the history of the colony and of the various phases of colonisation policy, together with a description of the canal on which the existence and prosperity of the colony depend, of the prevalent agricultural conditions and of the principal forms of tenure. At the same time the main features of the re-assessment of the various circles are fully stated, and the whole report will be of great assistance, not only to the officers who will in the future be charged with the administration of the area described, but also to those who may hereafter have to solve by the light of experience problems that may arise in colonies yet unborn. The wide range of the report gives scope for a literary finish rare in official documents and it forms a fitting record of an achievement which the Lieutenant-Governor recently ventured to describe as the finest example of successful irrigation and successful colonization which the world can show to-day.

3. The historical and descriptive portions of the report hardly fall within the scope of this review which must be mainly confined to a brief survey of the re-assessment operations. But it will not be out of place to give a summary of some of the statistics illustrating the development of the colony and the conversion within the present generation of this trackless and arid region into the richest and most flourishing district of the Punjab. The canal, opened originally in 1892, now consists of 427 miles of main line, 2,280 miles of distributaries and over 12,000 miles of water-courses. The average irrigated area during the three years ending 1911-12 exceeded $2\frac{1}{4}$ million acres, in a tract which 25 years ago raised only a few thousand acres of precarious rain or well crops,

and a cautious estimate puts the annual value of the crops now raised at about 7 crores of rupees, or more than double the total capital expenditure hitherto incurred on the canal. In the 20 years between 1891 and 1911 the population of the tract increased almost ten-fold, from 112,000 to 1,106,000, nearly one-half of the latter figure representing immigrants from the congested districts of the central Punjab. The colony is now traversed by nearly 250 miles of railway and 150 miles of metalled roads. Eight new market towns have sprung up and several older towns on the fringe of the tract have become important trade centres, while 38 factories have been built. In a good year the colony exports to Karachi some 300,000 tons of wheat alone, the value of which to the local producer at Rs. 3 per maund comes to 2½ crores of rupees; the exports of cotton, oilseed and other food-grains probably bring in another crore and are steadily growing, so that the agricultural prosperity of the tract is already higher than that of any other part of the Punjab; while in the matter of schools, hospitals, water-supply and other amenities of civilization it would stand comparison with any district in India. For these results the courage and devotion of the revenue and irrigation officers, no less than the enterprise and perseverance of the earlier settlers in overcoming initial difficulties, are responsible.

4. The total demand on account of land revenue and cesses now amounts to Rs. 69,45,345, a sum which, though exceeding that paid by any other district in India, probably does not exceed one-tenth of the gross value of the produce. The percentage of the full theoretical demand absorbed by the new revenue is shown as varying from 85 to 74 per cent. in the different circles, but the assessment is in fact much more lenient than these figures would indicate. In the four circles first assessed, three on the Jhang Branch and one on the Gugera Branch, the produce estimates were, as Sir Louis Dane remarked in reviewing the assessment reports, "conspicuously at variance with actual facts." The price assumed for wheat, the principal crop, was Rs. 2-2-0 per maund, though the average price of the preceding five years had been over Rs. 3 and in recent years has ranged between Rs. 3-8-0 and Rs. 4. The assumed outturns for this crop, varying from 8½ maunds per acre in Jhang Branch Circle III to 12 maunds in Gugera Branch Circle I, were equally below the mark, and there was a similar discrepancy between the estimate and the actual facts in respect of most of the other principal crops. The result was that the estimated value of the gross produce per matured acre in these circles was actually less than the value of agricultural exports according to the railway returns. In Gugera Branch Circle II wheat was valued at 36 annas a maund at a time when it was selling in Lyallpur for 51 annas a maund and the assumed outturns were even lower than those assumed in Gugera Branch Circle I, while in all these circles the theoretical demand based on cash rents was about double that actually imposed. In the case of the important Rakh Branch Circle, the largest in the colony, there was a much closer approximation to facts and the higher produce estimates and sanctioned rates clearly illustrate the leniency of the earlier assessments. But though the sanctioned rates in this circle are more than double those imposed in Jhang Branch Circle III, and more than 35 per cent. higher than the highest rate imposed in any other circle, even here the assessment absorbs only 74 per cent. of the theoretical demand by the produce estimate, and only 63 per cent. of that based on cash rents. We have thus the somewhat anomalous result that in this circle, where the general pitch of the demand is substantially higher than elsewhere, the fraction of the estimated half net assets which it absorbs is lower than in any other circle, owing to the under-valuation in prices, rates of outturn and rents assumed in the earlier assessment reports.

5. An interesting account is given in paragraphs 171 and 172 of the report of the methods followed in the internal distribution of the demand over estates and holdings. The unit of distribution was everywhere the square—27·7 acres—a system which, while it adds in some respects to the complexity of the Settlement Officer's task, as he must take it also as the unit of assessment, secures accuracy and equity in the assessment. The report makes it clear that the people fully recognize the advantages of this system, which, as Mr. Dobson has remarked, "leaves no single settler with a reasonable ground for complaint."

6. In paragraph 189 of the report the objections to the new demand, especially in the Rakh Branch Circle, are freely discussed. The standard of assessment in view of its earlier colonization and more assured prosperity was higher on the Rakh Branch than in other circles; the number of objections and appeals was consequently greater, but they were to a great extent engineered by interested parties, who enlisted the support of certain sections of the press in support of their fancied grievances. Mis-statements of fact and erroneous statistics were freely resorted to, but the disingenuous and factitious character of the agitation is amply proved by the ease with which the new demand has been met and by the sustained prosperity of the colony. The most striking proof of the leniency of the assessment throughout the colony is the steady rise in rents and in the value of land. As regard rents the figures quoted in paragraph 137 of the report show that in the Rakh Branch the average rental was in 1900-01 Rs. 6-6-0 per acre. By 1905-06 it had risen to Rs. 11-0-3, and by 1911-12, the latest year for which figures are given, to Rs. 14-9-0½. In his review of the Land Revenue Administration report for 1912-13, the Lieutenant-Governor observed that cases had recently come to his notice in which landlords in this circle had, after the imposition of the new demand, leased their squares for a term of years at a profit of Rs. 600 per square or Rs. 22 per acre, the lessee bearing all charges. The value of land has also steadily risen throughout the colony from Rs. 140 per acre in 1910 to Rs. 214 in 1915. The latter figure is the average price realized for more than 10,000 acres sold by grantees during a single year, and represents an average profit of 1,200 per cent. above the price at which proprietary rights had been acquired from Government by the vendors, as peasant colonists were allowed to purchase at Rs. 12-8-0 per acre and other grantees at Rs. 20-10-0, in addition to the initial *nazrana* varying from Rs. 6 to Rs. 10 per acre.

The agitation has long ago subsided and the Lieutenant-Governor was glad to be able to state publicly on his recent visit to Lyallpur that during the last 2½ years the district had set an admirable example of peaceful progress and steady loyalty, and had not been affected by the troubles which in recent times disturbed adjoining districts to the south and east.

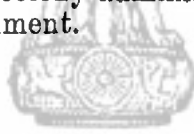
7. The term provisionally fixed for the duration of the settlement was twenty years in the case of the Rakh Branch and ten years for all other circles. The Government of India have now approved the confirmation of these provisional terms with certain modifications. It has already been observed that the Rakh Branch assessment is itself moderate, involving as it does a concession of over 25 per cent. of the half-net assets calculated by a cautious produce estimate; it is, however, not short of the standard imposed in an ordinary district and there is no reason for fixing the term of settlement for a shorter period than the normal twenty years. In the case of the other circles however a shorter term is called for. The fuller assessment of the Rakh Branch circle is a recognition of the fact that this area was colonized earlier than the neighbouring circles: it had benefited by concession rates for twenty years and had reached a stage of maturity which justified its treatment on the same lines as an old established district. As the other circles attain the same degree of development it is only fair that they should receive the same treatment, and were they allowed to remain proportionately under-assessed for a further period of fifteen years, their preferential treatment would constitute a disparity that could not be justified. The leniency of their assessment is moreover so extreme and the development, which is in progress and may be expected to continue, so rapid that by the end of a normal term of settlement it would be impossible for the State to fix a demand approximating to the recognised standard or to secure a reasonably full share of the net assets. Re-settlement of these circles will involve no re-measurement or revision of the record of rights, and no special field establishment will be required: no serious inconvenience to the people will therefore be involved and one of the most valid objections which can be urged against short term settlements is wanting in the present instance. In the circumstances the Lieutenant-Governor is pleased to confirm the assessments of those circles under section 53 of the Punjab

Land Revenue Act, 1887, and, with the approval of the Government of India, to fix the term of settlement at twenty years in the Rakh Branch Circle and at ten years in the remaining circles, the extensions and proprietary villages, with the following exceptions :—

- (a) In the case of the Jhang Branch villages situated in the Jhang district and of the Bhangu extension the term of settlement will be extended to 1923 when that of the Jhang district will expire; and
- (b) In the case of so much of Gugera Branch Circle I, as lies in the Khangah Dogran tahsil of Gujranwala, the term will be extended to 1925, when the settlement of the non-colony portion of that tahsil will expire.

These exceptions are in accordance with the recommendation contained in paragraph 217 of the report that the next re-assessment should be by tahsils.

7. The settlement operations were carried out by three officers—Mr. deMontmorency, Major Ferrar and Mr. Dobson—and lasted over a period of some five or six years. The excellent work done by these officers both in assessment and colonization has already been acknowledged by Government in the reviews of the various assessment reports, and it only remains for the Lieutenant-Governor to congratulate them on the final completion of their difficult and important task. His Honour has already recorded his appreciation of Mr. Dobson's admirable report. He has noted with pleasure the commendation bestowed by the Settlement Officer on the subordinate officials mentioned in paragraph 220 of the report. Sir Michael Fenton, to whose great administrative experience and ripe judgment the colony owes so much, has written an illuminating and comprehensive review. His remarks in paragraph 8 of the review as to the necessity of taking drastic action to repress the various forms of exaction and extortion that have arisen in the colony merit the serious attention of all officers concerned with colony administration and have furnished the basis of separate action by Government.



I have, &c.,

सत्यमेव जयते H. D. CRAIK,

Revenue Secretary to Government, Punjab.

No. 31.

FINANCIAL COMMISSIONERS' OFFICE:

Dated Lahore, the 10th January 1916.

FROM

MILES IRVING, ESQUIRE, I.O.S.,

Senior Secretary to the Financial Commissioners, Punjab,

TO

THE HON'BLE MR. J. P. THOMPSON, I.O.S.,

Revenue Secretary to Government, Punjab.

The Hon'ble Sir M. W. Fenton, K. C. S. I.

SIR,

I AM directed to forward the Final Report of the Chenab Colony Settlement with the accompanying note.

I have, &c.,

MILES IRVING,

Senior Secretary to the Financial Commissioners,

Punjab.

सत्यमेव जयते

Note, dated 3rd January 1916, recorded by the Hon'ble Sir M. W. Fenton, K.C.S.I., Financial Commissioner, on the Final Report of the Chenab Colony.

1. The literature dealing with the Chenab Colony is voluminous. In the administration and economic development of the modern Punjab, the canal colonies are the most notable achievement, and of the Punjab canal colonies the Lyallpur Colony is the prototype. Its importance is reflected in the length of Mr. Dobson's Final Settlement Report. For the reasons given by Mr. Dobson the standing orders limiting the bulk and scope of Final Settlement Reports are inapplicable in the present case. Mr. Dobson's report is both a gazetteer and a settlement report. The standard gazetteer is a volume dealing with the district as a unit. The Chenab Colony includes the whole of one and parts of two districts. Each such section of its area will, in future, be dealt with in the gazetteer of the district to which it belongs, but in bidding good-bye to the colony as an administrative unit, it is not only right and appropriate but inevitable that any writer charged with the duty of compiling a gazetteer should treat the colony area as a whole. His review of the past history of colonization and of the existing conditions and his stock-taking of present assets at the time when the separate colony organization has finally merged in the ordinary district administration, suitably marks the close of the old dispensation and the assimilation of the colony in the ordinary district scheme. Its several parts will follow the fortunes of the districts in which they are absorbed. There will not be another Chenab Colony Gazetteer, and there will not be another Chenab Colony Final Settlement Report.

2. If the length of an official report may bear any relation to the importance of the fiscal and administrative interests with which it is concerned there is ample justification for the 111 pages of matter which make up the present report. The land revenue of this tract, amounting to from 60 to 70 lakhs per annum, exceeds that of any other district in India. The nearest approach is the Kistna District of the Madras Presidency the area of which however exceeds the area of the Chenab Colony by nearly 50 per cent. If we take into account also the revenue from irrigation the claim of the Chenab Colony to the first place in importance will be absolutely unchallenged. Nor is this all. In any review of the income-yielding capacity of a tract some credit should be given to the part which it takes in contributing to the railway traffic receipts. From this point of view the position of the Lyallpur Colony must be regarded as one of high importance. That such pride of place should have been attained by a tract, which thirty years ago was an arid wilderness, is a phenomenon which can never be sufficiently dwelt upon by those who seek to appraise the results and achievements of British rule in India. Mr. Dobson, has of course abstained from any such blowing of the administrative trumpet, but his report is nonetheless a valuable record of solid facts to which resort can be had by all whose task it is to find justification for British rule in India.

3. The temptation to enlarge upon such topics, and the temptation to re-engage in the at one time burning controversies which are brought to remembrance by the historical chapters of Mr. Dobson's report—the political agitation of 1907 which led to the vetoing by the Government of India of the Colony Bill of that year, the appointment of the Colonies Committee and its Report—still a confidential document—the subsequent legislation of 1912, and the conferment upon the Government tenants for a merely nominal payment of proprietary rights representing a capital value of many millions sterling,—the temptation to re-open the discussion of these matters must be resisted by a reviewing officer, whose immediate concern is with that portion of the report only which deals with the assessment of the land revenue. Here too the progress of events has not been unmarked by controversy, and the pending question of the term of settlement has given rise to such divergence of opinion in the past, that it will be best to exclude it from the present review, and make it the subject of a separate reference to Government.

4. The settlement operations, which have been concluded, were of the nature of what used to be styled a First Regular Settlement. That is to say, the assessment was for the first time based upon an appraisal of the agricultural assets of the tract. The revenue rates previously in force were low initial rates, experimental in character and not professing to bear any relation to the profit-yielding capacity of the land assessed. They had to be very low rates because, being uniform in their incidence, they were applicable equally to the very worst as well as to the best land; they had to be adjusted to the capacity of the former. The temporary and empirical character of this initial assessment was thoroughly understood by all concerned, and no arguments as to the severity or sufficiency of the new assessment can be based on any comparison between the yield of the initial and of the new rates, respectively. Mr. Dobson has therefore rightly abstained from exhibiting his results in the form of any statement of increase of revenue due to re-assessment. Moreover, any such statement dealing with land revenue alone, and ignoring the canal occupier's rate assessment, would be misleading for a tract in which the charge for water is, from the agriculturist's point of view, just as important a factor of the assessment as the land revenue demand. The practically universal custom of lumping together land revenue and *abiana* charges and sharing responsibility for the combined demand in moieties between the landlord and the tenant, requires that we should take full account of occupiers' rates, and take cognizance of the important fact that they have been allowed to remain without any enhancement, as a consideration qualifying any estimate of the increase in the fiscal burdens caused by the reassessment operations now concluded.

5. But though for the foregoing reasons no object will be served by any comparison of the former with the new land revenue demand, some remarks are necessary by way of explanation of the differential pitch of the assessment in the several circles. The principal divergence, as will appear from the following table, is between the Rakh Branch Circle revenue rate of Rs. 4-9-0 per acre, and the rates in the other circles, which range from Rs. 2-9-7 to Rs. 3-7-10 per acre :—

Circle.	Allotted area.	Revenue rate.	Proportion of revenue to assets rate.	Demand.	Date of imposition.
		Rs. A. P.	Per cent.	Rs.	
Jhang Branch { I ...	205,536	3 1 7	85	6 21,768	Rabi 1911
{ II ...	253,146	2 9 7	84	5,76,688	Do.
{ III ...	82,426	2 5 1	80	1,06,715	Do.
Gugera Branch { I ...	870,773	3 5 0	80	12,11,855	Do.
{ II ...	327,824	3 7 10	82	11,27,890	Rabi 1912
Rakh Branch ...	457,024	4 9 0	{ 74 kind }	20,43,610	Rabi 1913
Extensions ...	128,026	3 0 7	{ 63 cash }	3,21,034	1913-16
Proprietary villages ...	81,486	2 0 3	—	58,710	Kharif 1914
	(total area)				
Total ...	...	...	...	61,28,246	

The higher rate in the Rakh Circle is to be explained, not merely by the statistical justification afforded by a higher produce estimate, but also by the practical consideration that the settlers in this circle had been established on the land for twenty years as compared with only ten years in the other circles. Thus for twenty years the Rakh Branch colonists had been accumulating capital and consolidating their position, being privileged throughout to pay only the low initial land revenue rates which left to them so large a share of the produce. The fact that notwithstanding this justification for a fuller assessment in the Rakh Circle the percentage of the theoretical half nett assets which has there been taken is below that of all the other circles, requires explanation. The closer approximation to the theoretical demand in the other circles was possible, because that demand itself was an under-valuation. There was under-valuation in the prices, rents and rates of outturn adopted in the earlier assessment reports. This has

been demonstrated by subsequent experience. The matter has been discussed in connection with the Rakh Branch Circle Assessment Report, and is referred to in the present report. In the second place the assessments proposed by the Settlement Officer, and accepted by Government, for the Rakh Circle were subsequently reduced on objection and appeal, not with reference to any considerations impugning the merits or justice of the demand, but at the instance of Government, purely as a concession. In paragraph 189 of the report, Mr. Dobson refers to the agitation engineered by the Press, which resorted to false statement of facts and erroneous statistics. Although there was no basis of reality in the grievances so manufactured, the action of Government served to remove the remotest shadow of any justifiable ground of complaint. It is satisfactory to learn from the present report that "the ease with which the new demand has so far been met—for coercive processes are most sparingly employed—and the complete cessation of disquiet among the populace at large are proof in themselves, if proof were not already at hand in the sustained prosperity of the colony, how disingenuous was the earlier agitation and how entirely wanting in any just or tangible basis."

6. The satisfactory results thus attained are largely traceable to the circumstance that these colony assessments are in a true sense holding-to-holding assessments. The assessment unit has been, not the circle nor the village, but the square. The usual procedure of distributing the village demand by a flat rate over the village area, with differentiation perhaps for irrigated and unirrigated soils, was not followed here. Much injustice to individuals is often involved in the usually adopted methods of internal distribution, dependent upon the wishes of the majority of the proprietary body. In this settlement individual proprietors with below-average holdings have been enabled to escape the fate of the victims of the all-round *bachchh* rate system. In every village differentiation by squares, according to quality of soil, has been recognised and concession rates falling more or less below the maximum village rates have been allowed to below-average and inferior squares. The account given in paragraphs 171 and 172 of the report of the distribution work carried out on these lines deserves to be studied, for it is the feature of the settlement which has contributed so largely to its success.

7. Such detailed discrimination in assessment would not have been possible but for the system of survey and record which has been established in the colony. As time progresses the merits and advantages of the square system are ever being demonstrated afresh. The square and its sub-division, the *killa*, have become units of tenure, and where we have these units, we have a *permanent map*. In a permanently mapped area, such as these colonies are, the problem of re-settlement need never be complicated by questions of map correction or re-survey and re-mapping. To the Settlement Officer of the past generation revisions of the record-of-rights represented fully one-half of the task implied by the term 'settlement'. To the revenue-payers concerned the process represented an invasion of the district by a host of revenue and survey officials, whose presence for a period of three or four years produced a not inconsiderable amount of harassment and unrest. Where *killabandi* tenure has been established, this bogey of re-settlement operations has vanished. In the operations now brought to a conclusion it at no time had any existence. Mr. Dobson and his predecessors had no survey or record-revising establishment to control, and their operations, which form the subject of the present report, were carried on without the local upheaval of the old time settlement. Future operations of the kind in the colony will be equally exempt from any such disturbing features—a consideration of importance in connection with the question of the term of settlement.

8. Although in this respect there has been a great amelioration in the position of colony revenue-payers, there is still cause for grave dissatisfaction with existing conditions. We ought not to rest satisfied with things as they are, so long as the corrupt and dishonest official finds in canal colony administration a source of wealth. Such corruption is particularly rampant among the subordinates of the Irrigation Department. The evidence recorded by the Colonies Committee of 1908 teems with repeated assertion as to the prevalence

of this great evil, and in its report the Committee in no dubious language testifies to its existence. Allusion to it is made also in paragraphs 23 and 58 of the present report. In all such references, I fear, there is a tendency complacently to accept the evil as inevitable. *Faslane* or harvest offering,—the fee exacted from practically every colonist by the canal patwari, under pain of incurring his displeasure—has come to acquire a widespread, but nonetheless demoralizing acquiescence. Even when the levy is not burdensome in itself, it gives countenance to grosser forms of extortion. Nothing less than an active crusade, supported by the direct inspiration of Government, will make headway against this great evil, and in any such crusade success can only be secured if the superior officers of Government, uninfluenced by concern for departmental prestige, and without respect of persons, however professionally efficient, throw themselves into the task with the earnest resolve that this great blot on our system be erased. In any such crusade we may confidently count upon the support of the indigenous press of every shade of opinion. More than one Punjab newspaper has in the past called attention to the evil.

9. It was for "the deliverance of the rural population from the periodic inquisitions of the subordinate assessing agency" as observed by Mr. Dobson in paragraph 218, that the experiment of a fixed assessment for both canal and land revenue was undertaken. Since that paragraph was written, the experiment has had to be suspended. It has been suspended because of an unforeseen change, due to silting, in the bed level of the Shahkot Distributary which channel was selected for the purpose of the experiment. This change has produced conditions of supply which transcend the range of modularity of the Gibbs' modules, with which the channel is fitted. For many years these modules had successfully established a uniform and constant supply in the villages to the outlets of which they were fitted. The situation brought about by the silting up of the bed of the channel has been fully examined by a Committee of Irrigation and Revenue Officers including the Chief Engineers and the Financial Commissioner, who came to the unanimous conclusion that the stability of conditions on the Shahkot Distributary, which for so many years these modules had served to secure, could in view of the change above referred to no longer be guaranteed. It was, however, at the same time decided that the Shahkot Distributary, by readjustment of the outlets to the altered bed level conditions and by re-fitting them with more up-to-date modules or gauges, could again be made eminently suitable for a fixed assessment experiment. It is understood that such remodelling is now being undertaken so as to admit of the early reintroduction of the suspended experiment. Nothing that has occurred would warrant our abstaining from its reintroduction. The considerations pointing to the desirability of such an experiment, which are set forth in my review of the Rakh Branch Assessment Report, are in no way affected by the temporary hitch which has occurred; and I trust that, in view of the importance of these considerations, there will be no hesitation about proceeding with the experiment as soon as the Irrigation Department reports that the remodelling of the Shahkot Channel has been carried out.

10. Although, as noticed in paragraph 1 above, the 'colony' has become absorbed in the districts within the boundaries of which its estates are situated, yet in the administration of the area in which Punjab Act V of 1912 is in force there will continue to be special features differentiating the work of the administrator from that which confronts him in other districts. The Government ownership of unallotted village waste and of unalienated sites in villages, the extension to all village sites of the record-of-rights Chapter of the Land Revenue Act with the consequent obligation to maintain maps and records for residential buildings and property, the enforcement of service conditions in the case of camel and mule-breeding grants, and the regulation of *ex-officio* *lambardari* grants, are all features involving problems of control and management which do not occupy the attention of the Revenue Staff in non-colony districts. On the other hand, the Pre-emption Act does not apply to colony areas. By a wise decision of Government the settlers have been safeguarded from its paralysing and strife-fomenting influence. But apart from such differences, due to the operation of statutes, and from such

other special features connected with the problems of canal irrigation, which are common to all canal tracts, the colony district administrator is, as compared with the officer in charge of a non-colony district, at a disadvantage in consequence of the heterogeneous character of the population with which he has to deal and the absence of such aids in administration as are elsewhere rendered by territorial magnates and homogeneous tribal organizations possessed of long standing local influence. Considerations such as these no less than the importance of the colony from a fiscal point of view suggest that for such districts as Lyallpur only the most competent and experienced officers should be selected as Collectors.

11. The assessment work of Mr. Dobson and his predecessors, Mr. deMontmorency and Captian Ferrar, has received the acknowledgments of the Financial Commissioner and of Government in the reviews of and orders on the several assessment reports. It should not be overlooked, moreover, that all three officers throughout performed the functions of colonization officer in addition to their assessment duties. Mr. Dobson's Final Settlement Report is as regards merit on a par with his excellent work as assessing and colonization officer. It not only serves as a fitting supplement bringing up to date the Chenab Colony chapters of the Punjab Colonization Manual, but is also a comprehensive survey and narrative of a protracted series of settlement operations carried out by three officers over a period of some five or six years. Mr. Dobson has the gift of literary expression, and in this respect his report possesses high merit. I endorse Mr. Dobson's commendation of the officials mentioned in paragraph 220 of the report. With the extension of colonization operations to other tracts the service of such officers with colony experience is in much demand, and many of those mentioned have received promotion.

12. As already stated a separate reference will be made on the subject of the term of the settlement. The confirmation of the settlement by Government, which is contemplated by section 53 of the Land Revenue Act, should apparently be given when orders are being passed as to the term of settlement.





सत्यमेव जयते



सत्यमेव जयते

FINAL REPORT

ON THE

CHENAB COLONY SETTLEMENT.

INTRODUCTORY.

1. The fact that this report deals with an annual fluctuating demand estimated at Rs. 69,45,345 for land revenue and cesses alone (*vide* paragraph 190) might perhaps in itself be deemed sufficient justification for its length. But there are other and more weighty causes. For Chapters V—IX, of course, no excuse need be offered: they are devoted exclusively to the assessment proper and require no further recommendation to the attention of Deputy Commissioners, who have to administer it. Chapters I—IV are more discursive and apply less directly to the matter in hand: of these Chapter I is a summary of Colony history, Chapter II an account of the Lower Chenab Canal, Chapter III describes the Colony population, and Chapter IV its agricultural conditions.

A summary of Colony history would hardly be irrelevant, even if definite instructions had not been issued for its inclusion, with special reference to recent events, which was actually the case. Chapter I is intended to furnish, for the benefit of successive Deputy Commissioners, an abstract of the Colony law and practice requisite to a proper understanding of the revenue problem. For it may here be remarked that the bulk of the Colony administration was delegated to the Settlement Officers by Deputy Commissioners, and they could therefore claim special knowledge of Colony affairs.

Chapter II deals with irrigation, the vital importance of which in a canal colony is self evident. It is intended to be more than a mere narrative. Deputy Commissioners in Colony districts have definite duties and responsibilities in connection with the distribution of canal water, quite apart from its bearing on revenue collections: they stand for public as against departmental opinion. At the same time irrigation is a technical business, conducted by experts, and the revenue officers have sometimes to handle proposals submitted for their opinion without the wherewithal to criticize or affirm. Chapter II does not profess to be exhaustive, much less authoritative, but it does represent an attempt to approach from the *zamindar's* point of view some of the burning questions touching irrigation, which district officers in the Colony are called upon to deal with day by day.

The subjects of Chapters III and IV are usually dealt with in assessment reports: that they were not so dealt with here is due to causes which will appear below. The first two assessment reports, Jhang Branch circles I and II, were returned for revision and re-written by the Settlement Officers. The new editions did not contain all the information in the old, which, moreover, are not now generally available. Further, owing to the urgency of the work it was not possible for the Settlement Officers to elaborate their reports in the usual way: the circles followed each other in quick succession, and punctual reassessment on the due date was held to be the primary consideration. For one circle, the Extensions and Proprietary villages, the most complicated and interesting of all, no report whatever is extant—the assessment followed the analogy of neighbouring circles and preliminaries were waived. In effect, the information contained in Chapters III and IV is not obtainable elsewhere. Even the Chenab Colony Gazetteer of 1904, though by no means silent upon the tribal composition of the Colony and its agricultural statistics, provides but a partial and imperfect survey. If a new Colony Gazetteer were in contemplation, these chapters might

have been curtailed; but no such Gazetteer is about to issue, for future Gazetteers will presumably deal with the districts composing the Colony, not the area included in this settlement by itself, while for a tract like this, distinguished above all for its phenomenal progress, the existing statistics ten years old were not only useless, but positively misleading. In the circumstances there was no alternative but to collate afresh the statistics appertaining to the rural population and present them in a form that would invite comparison between one circle and another and at the same time summarize conditions for the Colony as a whole.

Assessment circles, showing total, allotted and cultivated areas.

Circle.	Total area.	Allotted area.	Cultivated area.	Assessing officer.
	Acres.	Acres.	Acres.	
Jhang Branch, circle I	258,129	205,526	194,800	Mr. G. F. de Montmorency.
Jhang Branch, circle II	353,658	253,146	241,249	Captain M. L. Ferrar.
Jhang Branch, circle III	142,750	82,426	76,136	Captain M. L. Ferrar.
Gugera Branch, circle I	461,638	370,773	364,657	Captain M. L. Ferrar.
Gugera Branch, circle II	440,456	327,824	318,851	Mr. B. H. Dobson.
Rakh Branch	597,940	457,024	436,748	Mr. B. H. Dobson.
Extensions—Bahlak, Bhangu, Nahra, Napewala, Dangali, Killianwala.	200,413	128,026	115,612	Mr. B. H. Dobson.
Proprietary villages	81,464	81,464	38,203	Mr. B. H. Dobson.
Whole Colony	2,539,778	1,906,209	1,786,256	

2. The Chenab Colony Settlement is conspicuous for some abrupt departures from conventional policy of which

The assessment circles.

the formation of the assessment circles is a typical instance. These are usually parts of a tahsil, estates with certain main features in common being combined into homogeneous blocks for the sake of convenience. The number of these circles is in proportion to the extent and variety of the physical changes observable throughout the tahsil, which changes are reflected in the style and quality of the cultivation in the several tracts. None of these considerations, however, governed the distribution of the Colony area into assessment circles. To begin with, tahsil and Colony boundaries are not coterminous; no less than 8 tahsils contain Colony villages, but only one of them—Lyallpur—contains Colony villages and no others. Homogeneity, again, is no criterion: if it were, the entire Colony area need have made but a single circle, because in all material features—soil, rainfall, climate, cultivation—circles differ no more from each other here than estates in a circle elsewhere. Nevertheless a unit of assessment was desirable, not too unwieldy and based upon some fundamental principle. A principle was discovered in the evolution of the canal system and with it the scheme of colonization: briefly, priority of foundation was the basis upon which the Colony *chaks* were organized into circles. The date for the enhancement of the land revenue charges was made identical for a block of villages, founded about the same time upon the same branch of the canal. The result was the formation of 7 circles—counting the Extensions as one, though in point of fact the date of assessment is not the same for all of them. Besides this there are 58 Proprietary villages, included in the Colony Settlement because they receive irrigation from the Lower Chenab Canal or lie near its irrigation boundary.

It remains only to distinguish the part taken in the work of assessment by the various officers appointed to the settlement. Mr. G. F. de Montmorency began it with Captain M. L. Ferrar as his assistant. Between them they were responsible for rather less than half. I assumed charge myself on the departure of Captain Ferrar in 1911 and the settlement was finished by the summer of 1914. The work of these officers is described in the body of the report along with my own. With certain exceptions the assessment circles were dealt with in chronological order: their names, areas, and the officer responsible for the assessment in each case are set forth in the table above. The map at the end of the report shows their situation, shape and relation to one another.

CHAPTER I.—History of the Colony.

A.—PERIOD OF COLONIZATION, 1892–1906.

3. The area now known as the Chenab Colony originally formed part of the Sandal Bar, that is the lower half of the Rechna Doab, a name compounded of the words Ravi and Chenab, the two rivers which bounded it. The road from Lahore to Pindi Bhattian, *via* a Sheikhupura and Khangah Dogran, roughly defines its north-eastern limit, if nearly all the Sharakpur tahsil be excluded. South-west it extends as far as the railway station at Shorkot Road, where canal irrigation stops. South-east and north-west the Ravi and Chenab riverains, which enter only partially into the scheme of colonization, oppose its further progress. In its pristine state the Bar presented the appearance of a level plain, sparsely covered with bushes, except in the hollows, where there was a denser growth—a landscape monotonous in the extreme, yet not without a fascination of its own. In size and variety the jungle trees were an index to the nature of the soil upon which they grew. Thus the *van* and *karil* found a footing, where the *jand* could never have survived: the presence of *ber* and *mallha*, more fastidious still, generally suggested soil of distinctly superior quality, where *van*, *jand* and *karil* would grow in greater profusion and attain a more imposing stature. The *kikar* and *shisham* were practically confined to the wells in the Hithar. In all but the worst years the uplands were amply provided with nutritious grasses—*chhimbar*, *lambh*, *pilwahn*, *khavi*, to name but a few—and formed a great attraction for the riverain clansmen, who migrated there annually, when agriculture at home was suspended by the autumn floods. The graziers gathered themselves for mutual protection into settlements known as *rahmas* or *jhoks*, the latter peopled by camel-owners. They were not all migrants from the Ravi and Chenab: there were those who lived and had their being permanently on the Bar, eking out a precarious existence by cattle-breeding or random tillage with the aid of rain water. That this apparently desolate tract should have once supported a teeming population is incredible, but there is evidence of the fact in numerous mounds (*thehs*), strewn with *débris* of bricks and pottery, which can only mark the sites of human habitation in a by-gone age. Upon their means of subsistence, for these were no nomad camping-grounds but well-established settlements, we cannot pause to speculate: our primary concern is with the present and our immediate purpose to recount the steps, by which, through the beneficent agency of the Lower Chenab Canal, described in a separate chapter, this waste and inclement region was converted into a scene of unexampled agricultural prosperity. The original Bar may therefore be dismissed for the present, though we shall recall it again in some of its aspects relevant to the subject of this report—its merits, for instance, as a breeding ground for cattle (paragraph 101): cultivation, such as it was, and the assessment thereof (paragraphs 138 to 144): its physical features, viewed in their relation to the canal system (paragraph 163): and last, in chapter III, the hardy races, which it nurtured—like country, like men—in the stern discipline of a relentless climate.

4. The scheme of colonization, if not wholly philanthropic in its intent, was at any rate conceived in a spirit of singular breadth and magnanimity. The land available being absolutely at the disposal of Government, it was

possible to select colonists without regard to vested interests except for the comparatively small body of nomad graziers originally resident in the Bar and neighbouring landholders adversely affected by the scheme. The relief of pressure in congested districts was made the keystone of the Government policy : but it was coupled with a determination to introduce only practised agriculturists of approved antecedents and to found, in so far as might be, none but healthy rural communities of the best type. Pursuant to this main idea, three principal classes of colonists were originally contemplated : *peasants*, to whom a right of occupancy for 20 years was promised, if they duly resided and cultivated their grants : *yeomen*, who would be permitted to purchase proprietary rights on favourable terms after the fulfilment of certain conditions, which included personal residence : *capitalists*, who would be mulcted in larger payments than the yeomen, but were subject to the same privilege as regards acquisition of proprietary rights without any liability in the matter of personal residence. The last class included a few *auction purchasers*, who were to secure proprietary rights outright, subject to the conditions of sale. Some of the essentials of successful colonization were at the same time enunciated, which may be summarized as follows : (i) colonists were obliged to build houses and reside in a selected village site, join in the construction of a well and submit to certain elementary rules of sanitation : (ii) the control of all common land, roads, watercourses and grazing grounds was maintained in the hands of Government : (iii) as the country-side would be denuded of its fuel and timber reserves in the process of colonization, grantees were required to plant a certain number of trees. At the earlier stages the philanthropic idea was dominant : later, with the introduction of service grants, a fresh purpose asserted itself. True, the germ of it was present from the beginning in the allotment of extra grants to *lambardars* : the possession of such a grant implied services rendered or to be rendered, if not of a very definite character. But the mule-breeding and camel service grants were of a different type. The problem of providing for a number of Baloch camel-owners, nomad graziers of the Bar, had arisen in the Colony about the year 1897 : it synchronized with the appointment of a committee to consider how the transport necessary to the Indian Army could be provided at reasonable cost and without impressment or undue inconvenience to the persons providing it. The result was the foundation of the grantee camel corps, as it exists at present. A connection between service and land once established in principle, its extension to the *lumbardari* grants, which were made subject to mule-breeding conditions from 1903 onwards, was a natural sequence of events.

Such was, in brief, the plan of campaign, initiated with the appointment of a Colonization Officer in February 1892, and in its entirety even now not yet fully accomplished. In the synopsis of Colony history, which it is the main business of this chapter to present, the evolution of the colonization scheme upon the principles just enumerated will be described with little addition in the way of comment. The conditions of tenure are incorporated in statements, which varied from time to time and for each class of grantee. Reference will be made to their salient features, as occasion may demand, but without recapitulation at length of the contents. In like manner the most important changes in this connection, and the events which prompted them, will be set forth in their proper context.

5. Grantees will now be classified according to the original allotment as peasants, yeomen, capitalists or auction purchasers, military and service grantees being placed in separate categories. The present tendencies of the social fabric thus created are reserved for treatment in a subsequent chapter (paragraphs 131 to 133), which must be regarded as an appendix to this account

The wisdom of the choice made by the district and colony officers was generally unquestionable, but a few of the mistakes made are worthy of notice. A new Colony must start with a population of vigorous men, not past their prime : those who selected heads of families, in contravention of this fundamental principle, postponed public to private interests. Again, joint grants to a whole village or minute allotments in severalty to each of its individual

members, proved equally unsatisfactory. These could only result in apathy on the part of grantees, who lacked personal interest in their holdings, or difficulties with the Irrigation officers in regard to the distribution of water.

6. Peasant grantees were of three kinds—immigrant, nomad and Hithari.

Peasant: immigrant.

(i) *Immigrants* were generally taken from congested districts with a good agricultural tradition—Umbala, Ludhiana, Jullundur, Amritsar, Gujrat, Lahore, Hoshiarpur, Gurdaspur and Sialkot—and they were selected by district officers. Hereditary landowners, practically acquainted with agriculture, of known skill and industry, received the preference. The immigrant allotment includes some Christians, who received grants as individuals, unconditionally as regards fidelity to or apostasy from their professed tenets, but subject to the control of recognized missionary societies.

Nomad.

(ii) *Nomads*, the aborigines of the Bar, otherwise known as Janglis, were selected by the colonization officer. In the absence of proper documentary evidence the attestation of nomad colonists was a highly invidious task. Returns of births and deaths, payments of the grazing tax (*tirni*) or *kasht barani* land revenue, even criminal records, were adduced as evidence of Jangli origin, supported by the dubious oral testimony of local notables. In the end Colony officers erred deliberately on the side of generosity and allowed the benefit of the doubt in a good many very unlikely cases.

Hithari.

(iii) *Hitharis* were hereditary landowners of the Chenab and Ravi riverain, who had suffered through the construction of the canal by loss of *sailab*, tenants and grazing grounds. In their case compensation rather than colonization, was the end in view, permanent residence on the colony grant being waived in order to preserve the old riverain holdings from complete abandonment.

7. Yeoman grantees comprised those who, without attaining to the ranks of the richer gentry, were still well above the ordinary peasant class.

Yeomen.

They were recruited from good *zamindari* families with considerable ancestral holdings in the old districts, a class rich in credit and resource and including many men of undoubted intelligence and enterprize. The unit of grant was from 2 to 5 squares—it was not anticipated that yeomen, like peasants, would cultivate in person—and a *nazarana* of Rs. 6 per acre was leviable, half before the commencement of the tenancy and half within the next five years. Upon the expiry of this period the tenant was permitted to purchase proprietary rights by paying a sum equal to ten times the amount of the owner's rate, land revenue and *malikana*, taken together, provided the conditions of allotment had been duly fulfilled.

8. The capitalist element was introduced in the hope that men of substance would be forthcoming—in many cases they were public servants, who

Capitalists.

had deserved well of Government—to assist by example and precept, as well as the outlay of money and brains, in the commercial development of the new venture. Capitalists received grants of 6 to 20 squares, subject to the payment of a *nazarana*, wholly in advance, which varied from Rs. 10 to Rs. 20 according to the size of the grant. The conditions regarding the acquisition of proprietary rights were the same as for yeomen. There were no restrictions in theory as to the class and locality, from which these grantees might be drawn, and the possession of wealth was not in itself a qualification: but in making the grants Government avowed its desire to reward good service and at the same time supply the colonists with natural leaders.

9. Auction purchasers were those who secured lands, for which they had previously bid with success in open competition. Conditions of sale were

Auction purchasers.

promulgated from time to time and widely advertised, facilities being invariably afforded for the inspection beforehand of the parcels offered for sale

Grants obtained in this way could not be subsequently amended and exchanged : hence the necessity for proper demarcation and survey in advance. Auction purchasers are by no means numerous : as a class they have much in common with the capitalists, though the manner of their appointment to colony grants left no room for the exercise of discretion or discrimination.

10. Military grantees rank as peasants or yeomen according to the size of their holdings. It may be remarked in passing that the military authorities followed no very definite principles in the distribution of the land at their disposal, with the unfortunate result that pensioners of the same standing were sometimes treated differently and the colony officers were expected, rather unreasonably, to adjust the differences by additional allotments. Grants of the yeoman type were as a rule only made to commissioned officers. Length of service -not less than 20 years- and *zamindari* connections were a *sine qua non* for all military allotments. In some exceptional cases reward grants were made to military pensioners on capitalist terms without *nazarana* or subsequent payments on acquisition of proprietary right. Mazhbi Sikhs received allotments on special terms, which fixed two-thirds of a square as the unit for a sepoy and two squares for an officer. The Mazhbis on the Rakh Branch are all pensioners of the 23rd, 32nd, and 34th Pioneer regiments.

11. None of the grants so far dealt with had any service obligations attaching to them. Three classes remain, which had for their basic principle remuneration in land and the profits therefrom for the due performance of certain definite duties. Two of these, the tree-planting and mule-breeding grants, differed from the third in that they were of a subsidiary character, the grantee in each case being already in possession of land untrammelled by service conditions. But it was not so with the camel grantees, whose sole means of subsistence lay in their service grants. These new types will now be examined *seriatim*.

(i) The camel service scheme owed its inception to causes, which have already been indicated. The Balochis in question pledged themselves to maintain and register for transport purposes a number of camels in consideration of the grants of land they received from Government. There were three classes of such grantees : *first class* Balochis, who were to produce one camel per square : *second class* Balochis, who maintained a camel for half a square : and certain *reward grantees*, who received 5 to 10 squares each on second class terms. The somewhat arbitrary distinction between first and second class Balochis was intended to mark the difference between hereditary camel-owners, who would in the ordinary course have received half square grants as peasants, had the service scheme never been introduced, and their dependants, for whom no grants at all were in contemplation apart from that scheme. *Chaudris* were appointed to supervise the observance of the service conditions, for which they received allotments of land up to a maximum of three squares each. In practice, though not in theory, the camel *chaudris* are invariably *lumbar-dars*, and the most onerous of their liabilities is the obligation to make good any deficiency in the contingent of camels, for which they assume responsibility. The camel corps are under the charge of a Supply and Transport officer with headquarters at Lyallpur. His duty is to register camels, enlist *sarwans* and hold regular inspections of men, gear and animals. Camel men are granted *takavi* loans by Government to replace casualties among their registered animals.

The conditions of allotment for camel-owning tenants contained some special provisions, which are worthy of attention :---

- (a) Government reserved the right to appoint heirs to vacant tenancies.

The introduction of this novel rule of succession was designed to secure the impartibility of the holdings, without which the efficiency of the scheme must have been endangered.

- (b) The tenant had to produce all camels and attendants due from him at 15 days' notice in the event of war, and at one month's notice in any other case.
- (c) The tenant undertook to plant twice as many trees as he possessed acres in his holdings.

(ii) For the *mule-breeding scheme* the machinery provided by the existing grants to *lumbardars* in virtue of their office was utilized, the scheme applying originally only to *lumbardars*. These grants had at first been allotted on peasant terms, that is to say they were not impartible and tenable only with office, as they should have been. From 1900 this defect was remedied and all *lumbardari* grants were made liable to resumption on the decease, dismissal from office or resignation of their holders. That was the situation in 1903, when the mule-breeding scheme was launched upon the Colony. From that date all newly-sanctioned *lumbardari* grants were made subject to the maintenance of a mare fit for the breeding of army mules. Existing holders of these grants now fell into two categories. Those who had obtained additional grants on peasant terms prior to 1900 were offered a further grant, if they would voluntarily set apart a full square and admit liability to mule-breeding conditions, the square to become impartible and tenable only with office—not all, it may be remarked, accepted the Government offer. *Lumbardars*, on the other hand, who received their grants between 1900 and 1903, were exempt from the mule-breeding conditions during their tenure of office, but the grants are not renewed to their successors, unless they signify their acceptance of the conditions. Mule-breeding is controlled by an officer of the Army Remount department stationed at Lyallpur, who passes and brands approved mares, inspects the progeny, and reports infringements of the conditions. Some further remarks on the history of these grants and the working of the scheme will be found in paragraph 35.

(iii) *Tree-planting grants*, locally known as *zakhiras*, generally consisted of five *killas* and they were held by *lumbardars* under conditions quoted in paragraph 526, Colony Manual, volume I. They were intended to serve as nurseries for the growth of seedlings, which would in due course replenish the fuel and timber supply. The grants were temporary and revocable at the will of the colonization officer, both nursery and trees being considered the property of the Crown. Half the area allotted on these terms was to be devoted to arboriculture; the other half could be cultivated by the owner for his own benefit. The nursery was further exempted from land revenue and received water free in both harvests, at first for five years, afterwards in perpetuity.

12. The Rakh Branch Circle, like the rest, was named after the main source of its water-supply, though the Mian Ali and Gugera Branches of the Canal also contributed their quota. It was here that the first scenes of colonial activity were laid. As early as 1890 small areas of land irrigable by the inundation canal had been allotted to Mazhbi pensioners, but it was not till 1892 that the work of colonization began in earnest. Peasants, yeomen, capitalists and auction purchasers were all represented in their due proportions. But the prospects of the would-be settlers were not at first entirely attractive. A journey to the Sandal Bar was in those days no light adventure. Railways there were none—the road lay on foot through regions nearly as waste as the Bar itself and peopled by tribesmen not less uncouth and violent than the Bar nomads. Many who started on that pilgrimage never reached the land of promise: those who did found themselves the object of continuous hostile demonstrations on the part of the aboriginal population. It is necessary to explain the attitude of these Bar nomads at some length. Themselves little inclined to abandon their vagrant habits and believing that the canal would be, like its predecessors, a failure or at most but a partial success, they hoped to hold their own by adopting a policy of attrition, to harass the new comers by constant assaults on their persons or property, and so regain the sovereignty

of the Bar, which they regarded as theirs by right. Other troubles, not less vexatious, beset the early settlers. Their crops matured, but there was none to harvest them : once harvested, the produce could only be exported by the perilous routes they themselves had followed. Irrigation was by no means perfect : the first levels taken by the Canal officers were far from accurate and only the main waterways had been constructed when the settlers first arrived. Many of these difficulties were smoothed away by the tact and foresight of the Colony officers : others were resolved, as they were bound to be, by the mere efflux of time. The nomads found themselves hemmed in by those whom they had sought to oust, or actually defeated in their nefarious practices by bolder spirits, like the Sikhs, among the immigrant population. In the end, making a virtue of necessity, they saw the wisdom of compromise and accepted grants of land. These were proportioned rather to the fecundity of their race than the actual needs of the moment. Of the happy results, which followed this generous policy, more will be said hereafter : both in the Rakh Branch and elsewhere the nomads have largely vindicated the confident hope of the Colony officers that they would forswear their evil ways and develop into useful citizens. Economic stress was relieved, none too soon, by the construction of the Wazirabad-Khanewal Railway, which reached Lyallpur in 1896. There a new market town was built, to which the headquarters of the Colony were at once transferred from Shahkot, where they had been at first located. Sangla and Jhumra were founded in the same year. The establishment of these three market towns, connected by rail with the main line, marks the conclusion of active operations on the Rakh Branch. The early hardships once surmounted, every augury of success smiled upon the infant colony : its rapid development was assured, its brilliant future already discernible.

13. Meanwhile colonization on the Jhang Branch was proceeding apace.

Colonization of the Jhang Branch (1896—1898).

The term Jhang Branch, used in this connection, means and includes all three of the circles so designated, but not the Bhangu Extension. Land was first distributed in 1896, and the bulk of the work was completed by the end of 1898, when 390,066 acres had been disposed of. By 1899 the railway had reached Toba Tek Singh and prepared the way for the foundation of Gojra (1899) and Toba Tek Singh (1900), now flourishing towns. Three years more were occupied in consolidating and extending the original allotment. For colonists hung back somewhat unaccountably. The rival attractions of the fine Gugera country, to which irrigation was just then being extended, and the supposed inferiority of the Jhang Branch lands no doubt acted as a deterrent on new comers, while actual grantees clamoured for exchanges, sometimes justifiably, but more often provoked by a restless spirit of speculation, hard to suppress and harder still to satisfy. The colonization of the Jhang Branch introduced some novel features, deserving of notice in this place. The area set apart for yeomen and capitalists was reduced in consequence of their failure to fulfil expectations on the Rakh Branch (*vide* paragraph 132). Compensatory grantees of the Chenab riverain (Hitharis), elsewhere defined, were now for the first time included in the category of peasants and received colony allotments as such. Lastly, the conditions of tenure were materially altered, as follows :—

- (a) Every grantee was compelled to contribute to the cost of a well in the village site.

This was a practical remedy for a state of affairs constituting a serious menace to health. Tanks, often shared by man and beast, had hitherto been the only source of water-supply for drinking purposes, since without compensation few would undertake the cost of a well.

- (b) Every peasant grantee was compelled to build a house in the estate containing his grant.

He was already bound to settle permanently : the new proviso only made the condition more explicit.

- (c) The provisional assessments were for a period to be fixed by the Local Government, not, as on the Rakh Branch, for a covenanted term of 20 years.

This was the first indication of the policy subsequently adopted for all circles other than the Rakh Branch, to allow a clear 10 years (though the figure was not at first expressly stated) of exemption from enhancement in the land revenue charges.

- (d) Every yeoman grantee was compelled to settle permanently in the estate containing his grant, unless specially exempted.

Hitherto he had only been obliged to build a house and reside by proxy : the new proviso was aimed at chronic absentees and indifferent landlords.

14. The Gugera Branch includes, in this connection, both circles of

Colonization of the Gugera Branch (1899--1902).

the name, but no Extensions. Long before the completion of the Jhang Branch allotment Colony officers were at work on the Gugera lands. Between 1899 and 1902 no less than 709,570 acres were distributed. It was a period of uninterrupted progress and little change in Colony policy, save for one far-reaching innovation, namely the creation of service grants, already discussed at length in paragraph 11. Capitalists and yeomen were generously treated, if not so favoured as on the Rakh Branch. Military and Police pensioners fared better than heretofore. Conditions remained much the same : but yeomen were now prohibited from transferring proprietary rights acquired under the terms of their grant without previous sanction, exclusion of undesirables being the end in view. In the matter of markets and communications the Gugera Branch was at first somewhat handicapped—the Chichoki-Shorkot Road railway did not as yet exist, nor the market towns of Jaranwala and Tandlianwala ; these were subsequent foundations, designed in due course to meet the growing needs of a tract, which was to prove equal, if not superior, to any of the preceding circles.

15. The era of actual colonization closes with the allotment of the

Colonization of the Extensions (1903--1905).

Extensions, six in number and named as follows : Nabra, Nupewala, Dangali, Bahlak, Killianwala, Bhangu. All except the last are watered from the Gugera Branch of the canal : Bhangu is a Jhang Branch Extension. They were colonized between 1903 and 1905 with peasants (including a number of camel-men) and *nazarana* grantees in normal proportions. Some significant changes were introduced into the peasant conditions at this stage :

- (1) Rs. 2 per acre was imposed on acquisition of occupancy rights—not for fiscal reasons, but to enhance the value of those rights in the eyes of grantees.

For reasons, into which it is not necessary to enter, this charge was never actually levied.

- (2) Tree-planting was made compulsory.

The same condition had been imposed on camel service grantees. In both cases it remained a dead letter, since capacity and inclination for arboriculture were alike wanting.

- (3) Grantees were made subject to a penalty not exceeding Rs. 100 in default of compliance with conditions.

This power to inflict a moderate money fine rendered resort to confiscation—hitherto the sole penalty—unnecessary, save in extreme cases.

- (4) On the death of a tenant without acquisition of occupancy rights his grant escheated to Government.

Resumption in perpetuity was not contemplated in this proviso, but reallotment to lineal heirs and the exclusion of distant collaterals.

16. In every Colony *mauza* space is set apart for the *abadi*, ranging from one-half to two squares. A single *abadi* might suffice in a central situation, or there would be two, separated by considerable distances, according to the shape of the *mauza*. Two-square *abadis* are common on the Rakh Branch, where the *mauzas* are large and unwieldy: small, self-contained *chaks*, like those of the Jhang and Gugera Branches, require as a rule only a single square. Care was taken to locate the *abadi* on high ground, where canal water would not collect: on the other hand such land might prove unsuitable, as containing too much sand, or be otherwise defective for building purposes. The importance of reserving waste land near the village site for extensions and domestic needs was at first imperfectly realized; such reservations are not always available now, even where the necessity is greatest. An ideal arrangement would be the retention of four half squares of *charagah* parallel to each side of the *abadi* square.

17. The first site plan for peasants had at least the merit of simplicity. The residential area was divided into four blocks by two intersecting cross roads, 40 feet wide, bounded on all sides by a circular road of the same size. Each block was again split up into 9 smaller blocks by four intersecting 20 foot roads. This design was used on the Rakh Branch. The introduction of main cross roads and a boundary road was eminently sound: the cross roads ensured ventilation, while the circular road made an effective barrier against neighbouring cultivation. But no special provision was made for tanks, menials and shopkeepers, and grantees were allowed to carve out compounds of irregular size from each of the 36 blocks, into which the *abadi* was divided. These drawbacks were removed on the Jhang Branch, where rectangular compounds, serially numbered, were for the first time provided, with separate quarters for menials and shopkeepers. The latter were located in the *chawk*, as the point of intersection for the main cross roads was called, for their better protection against robbery. A fresh type was evolved for the Gugera Branch; cross roads and boundary roads were retained, but the menials' quarter was smaller and less completely isolated, while provision was made for tanks within the village site. An internal circular road also appeared for the first time. The latter was a welcome innovation from the hygienic point of view, but the Gugera plan is not otherwise to be commended. The tanks were insanitary and, after the construction of wells at every *chawk*, superfluous also. Fewer roads debouched upon the *abadi* boundary. This was due to a growing impression that the village site should present an inviolate front to any one attempting an entry by force or fraud. Places of ingress and egress were accordingly reduced in number and in some cases fitted with elaborate gateways. No *ahata* openings, moreover, were permitted on to the boundary road. An essential detail of this scheme was the effective occupation of all the outside *ahatas*, which were, unfortunately, those least in request. The necessity for protection of this sort was perhaps exaggerated: at any rate occupiers of outside *ahatas* never rest till they have obtained an exchange to the inner lines, if these contain any unallotted space. As a general rule allotment from the centre outwards is the best policy: in this way newcomers are not unduly favoured by the gift of inside *ahatas*, which sometimes happens under existing circumstances, if all the outer line is already occupied. By 1901 menials had increased and multiplied: they were allowed more room on the Extensions, but still remained in somewhat too intimate proximity to the *abadkars*. The excellent cross roads are absent also from the Extensions plan, which is much less spacious than its immediate predecessor. In the relegation of the village tank to regions outside the residential area, however, it marks a conspicuous advance. From 1902 outwards a vigorous effort has been made by persuasion and exhortation to banish noxious elements from the sphere of human habitation. Thus tanks are now frequently transferred at the request of *lumbardars* beyond the pale of the boundary road: special areas are provided in the adjoining *charagah* for manure, which no longer fouls the dwelling sites: and grantees are encouraged to follow the admirable example set by Janglis and stall their cattle in steadings away from the *abadi* on cultivated land. In some ways the design approved for camel

grantees is the best of all. This provides for a large open space in the centre of the square, where camels can be tethered or wander at will. Menials and shopkeepers are located in the middle and tanks outside altogether.

To conclude, no one of the Chenab types can be pronounced ideal, perhaps for the reason that a single square is not large enough to provide for every contingency. Not less than 36 *marlas* for each square of cultivation should be the unit of allotment—it is often less here: the broad cross roads and boundary roads are a *sine qua non* and as many others 40 feet wide as can be conveniently included: menials should be completely isolated and provided with tanks and *chawks* of their own—they are beginning to be fastidious in these things: more space should be provided in the centre of the *abadi*, because it is the pivot of village life, where the shops, well and public buildings are assembled. But if the Colony *abadis* are not ideal in design, they nevertheless offer flourishing examples of rural existence under conditions vastly superior to those obtaining in the old districts.

18. The *nazarana* grantees were not at first required to gather themselves into a common *abadi*, but lived in scattered hamlets on their squares,

In nazarana mauzas.

obviously an expensive and inconvenient arrangement destructive of all union and cohesion. This was the Rakh Branch method, presently to be replaced by the normal system which was made compulsory on the Jhang Branch. The original design for this class of grantee was little more than four blocks, intersected by broad thoroughfares, but without even a boundary road. The Gugera plan marks an advance. There were circular roads within and without the residential area and the blocks were subdivided into small compartments, serially numbered. But the merit of the design is marred by tanks at each corner. Internal arrangements were left to the caprice of the grantees, whose interest waxed and waned according to circumstances not here relevant. Grantees were provided with residential space proportioned to the holding of each: and further interference was usually only necessary, where serious breaches of tenancy condition were reported.

19. Every peasant *mauza* contains, or should contain, an unallotted reserve, known as *charagah* (grazing ground). The name is a misnomer,

Charagah.

because these reserved areas seldom afford pasture for cattle: the original idea has turned out to be a counsel of perfection. In withholding from allotment 20 per cent. of the total area (less *ghairmumkin*), for that is the percentage nominally kept as *charagah* in these *mauzas*, Government contemplated the formation of compact blocks, situated at the tails of watercourses and inundated with the waste supply. But there was never any water available; nor was it sound policy to reserve from allotment the lowest, and therefore usually the best, land in every *mauza*. As for the theory of the compact block, it was rendered illusory by practical considerations. The allotted area might be flawless from every point of view—such cases are not uncommon. But more often parts of it were found after a time to be unirrigable or otherwise unfit for cultivation. No previous soil survey or delineation of contours could rival for accuracy the test of experience as a guide to actual conditions. In these circumstances it was but natural to allow settlers to exchange their grants, in whole or part, with equal portions of the *charagah*, which came in due course to comprise the worst portions of every *mauza*, where it existed. As grazing ground the *charagah* now serves no useful purpose. Colony cattle subsist on the abundant fodder, green and dry, grown by every class of colonist. But apart from their original function the *charagah* areas still possess important virtues; they afford dry open spaces for the recreation of men and cattle—in this connection it is unfortunate that larger areas were not reserved round village sites, where they are now sorely needed: they act as a fuel and timber reserve: they provide the wherewithal for unforeseen allotments. 20 per cent. was thought to be a liberal margin for these requirements and on the Extensions—the failure of the *charagah* in its original rôle being already apparent—10 per cent. was substituted. *Charagah* does not include the natural drainage lines (*mahfuza nala*), controlled by the Irrigation department, though, in the pasture

they afford, these rich drainages often merit the name of *charagah* much more than the areas actually so styled.

20. In normal times Government waste land could only be leased by means of an indenture embodying the terms of the lease—obviously a cumbrous and inconvenient method of procedure. That was one good reason why the colonization scheme called for special legislation. Another was the finding by the Chief Court in 1891 that the Tenancy Act overruled colony conditions in so far as they were inconsistent with that Act. The Government Tenants (Punjab) Act, III of 1893, was, therefore, primarily designed to render the conditions of tenure indisputably binding on the colonists to whom they applied. The Act enjoined the following procedure :—

Legislation.

- (i) Issue of a notification applying the provisions of the Act to a given tract of land.
- (ii) Issue of statements of conditions.
- (iii) Opening and maintenance of registers showing tenancies granted on the conditions aforesaid.

The signature of a tenant in a register containing a statement of the conditions applicable to his land bound him to those conditions, any previous agreement or any provision in the Tenancy Act notwithstanding. The Act also provides : (i) that the rights of a tenant should not be sold in execution of a decree or transferred without sanction, (ii) that all sums due to Government in respect of tenancies should be recoverable as means of land revenue.

21. The Colony area originally formed a part of three districts—Gujranwala, Jhang, and Montgomery. As the work of reclamation proceeded fresh administrative problems naturally presented themselves, and important changes ensued. The first of these was the formation, in 1893, of the Khangah Dogran tahsil, which includes practically all the Colony villages of the Gujranwala district. Some indication of the rate of expansion is given in the marginal table. It was not long before another new tahsil was required, this time, that is in 1896, at Lyallpur, then still a part of the Jhang district. Other new tahsils, Samundri and Toba Tek Singh, also of Jhang, were founded in 1900, the boundary of the Montgomery district having by that time receded to the line of the Ravi. The climax was reached on December 1st

PROGRESS OF ALLOTMENT.

Year ending September 30th.	Acres allotted.
1894	422,774
1897	624,088
1900	1,886,605
1903	1,773,398
1906	1,829,880

1904, when the new district of Lyallpur was constituted, comprising the three tahsils of Lyallpur, Toba Tek Singh and Samundri, with a sub-tahsil at Jaranwala. Another event of some importance was the assumption, from 1st April 1907, by Deputy Commissioners of the functions of the Colonization officer, whose charge ceased henceforth to exist as a separate entity. An Assistant Colonization officer remained, however, at Lyallpur to discharge some of his duties under the orders of the district officer.

B.—PERIOD OF EXECUTIVE AND LEGISLATIVE CHANGE, 1907—1912.

22. The year 1906 marks an epoch in Colony administration. By this time the purely beneficent stage was past : it had become necessary to enquire how far conditions of tenure had been complied with, especially the conditions as to residence ; pressure had been brought to bear on recalcitrants : the work of colonization entered upon a phase as distasteful to the Colony officers, as it was vexatious to the people : and to crown all came the discovery that the authority, under which they carried out their duties, was largely defective.

Introductory.

Act III of 1893 was intended to secure binding effect for conditions of tenure. This object was, it is true, attained, but the necessity for power to enforce conditions without resort to the courts seems to have been overlooked. The conditions, though legally binding, could not be made operative by summary or executive process, should a grantee decline to accept an order against him. How serious a check was thus imposed on the work of the Colony officer will be apparent when the scope of his duties is considered. They included the distribution of an area amounting to more than two million acres among a motley crowd drawn from every part of the Punjab, wanting in cohesion, divided by mutual jealousies, harassed by the predatory habits and unveiled hostility of the Bar nomads: the prevention of encroachment on the reserved area: the allotment of the village sites after a fixed plan: promotion of sanitary rules, to which settlers were indifferent or opposed: provision for the growth of trees to replace indigenous varieties destroyed in the process of colonization: last but not least, the initiation of the ordinary administrative system in the midst of all these multifarious and distracting occupations. The task would have been difficult enough under the most ideal circumstances. Unfortunately the circumstances were not ideal. So far from relying implicitly upon the ordinances of Government, according to their wont and tradition in the old districts, the colonists showed themselves unprepared for the most elementary forms of discipline and inclined to cavil at the most transparent measures for their welfare.

23. There were perhaps three grievances outstanding in the popular mind at this time. In the earlier state-

Grievances of the Colony population:

(1) the system of fines.

ments of conditions the sole penalty for a breach of any particular stipulation was confiscation of the holding—obviously an extreme measure. Arguing *a fortiori*, the Colony officers resorted to minor measures, at first confiscation of crops and later cash fines. No doubt fines had a quasi-legal sanction, in that there was legal sanction for a heavier penalty. Some of those imposed later had no basis in law, but were justified by circumstances. They were employed to promote the policy of Government generally, to correct faults, remedy defects and stimulate effort, and the evil lay less in the system itself than in the opportunities it afforded to the parasite horde of underlings to satisfy dishonest and selfish ends. The system of fines constituted the gravamen of the popular indictment against Colony administration, which began to assert itself at the close of 1906.

It is probable that the punitive measures, to which the Colony officers

(2) Dissatisfaction with Colony conditions.

had recourse in order to enforce compliance with conditions, would not in themselves have caused offence if those conditions had met with general approval. But at allotment the land hunger obscured every other issue and grantees undertook with a light heart all sorts of obligations, which, upon mature reflection, they must have admitted to be unpalatable. Later on it came as a rude shock to the majority to learn that Government proposed to apply with the full weight of official authority regulations that now seemed to be an infringement of customary law and practice. The assessment of ground rent in village sites, discussed in paragraphs 153 to 155, was certainly regarded as such, and to a lesser extent the special service conditions also. Colonists were not accustomed in the old home to these invasions of their domestic concerns, rendered as they were the more intolerable by the exactions of departmental subordinates. One section of the community, and that not the least influential, the yeomen, made a grievance of their obligation to reside in the Colony, though the most captious critic of Government policy could hardly have charged the Colony officers with severity in enforcing this condition. On the Rakh Branch residence by proxy was everywhere allowed: even in the other circles it was the rule rather than the exception, though the principle of personal residence for yeomen was never formally abandoned. The root of the trouble lay in the apparent partiality, with which the rule was applied. Yeomen compelled to reside were unable to fathom the reasons, for which others were exempted: nor can it be denied that the leniency used in many of these cases was open to misconstruction. So when about 1907, on the

completion of the record of rights, defaulters who hoped to escape detection were brought to light and disqualified for proprietary rights, pending compliance with the residential condition, there was naturally some display of ill-feeling, for which nevertheless only the vaguest grounds existed.

The manipulation of the water-supply was also adversely criticised. The

(3) Distribution of water.

Irrigation department, not content as in old districts to deliver water only where it could be easily brought, here assumed the responsibility of evolving and working a project, by which every holding received a regular supply, and maintaining the stipulated supply year by year. For there was no alternative in the colony to cultivation by means of canal water: the depth of the water-level excluded well irrigation and the scanty rainfall, though it might assist irrigation from the canal, was not in itself sufficient to bring crops to maturity. The success of the Irrigation department in this great undertaking is described elsewhere. It has not been impugned by the volume of criticism, with which the cultivator has at all times assailed them. In the earlier stages of colonization the land required, and the river provided, an ample supply of water. As the system developed a gradual reduction was necessary to secure effective distribution over newly occupied areas. But, however necessary or justifiable such reduction might be, it never failed to engender the bitterest opposition. A minor grievance was the double staff of Revenue and Irrigation subordinates, who undoubtedly took advantage of the unsettled conditions and material prosperity of the people to exact illegal gratification for the countless small services, which it fell to Government to perform with the Colony in its inchoate state.

All this disaffection was but the price of efficiency: in creating, or attempting to create, ideal conditions the Colony officers found themselves at variance with public opinion, which expressed itself emphatically in favour of ancestral custom. It was not the fault of Government, or of the Colony officers, that their efforts for the public weal were so persistently and so deliberately misinterpreted.

24. Such was the condition of affairs, when the Colony Bill of 1907 was promulgated. It was a Bill directed solely to the improvement of Colony

The Colony Bill of 1907.

administration and the removal of legitimate grievances: indeed it was rendered necessary by the defects in the Act of 1893, to which reference has already been made. But unfortunately its appearance coincided with an agitation of a political character in the Punjab. The leaders were quick to discern a fertile soil for the seed of sedition; the situation then obtaining in the Colony afforded a favourable opportunity for enlisting the sympathies of the agricultural classes in a campaign, which had for its object the vilification of Government policy: while the intimate connection of the Colony with nearly every district in the eastern and central Punjab and with all the Punjabi regiments invested the agitation with an importance out of all proportion to the real merits of the case for reform or reorganization. In the end the Governor-General's assent was withheld from the Bill as passed in the Punjab legislature and a committee appointed to consider afresh the whole question of Colony administration.

25. This committee consisted of the following members:—

The Colonies Committee of 1907.

- (1) Sir Thomas Gordon Walker, K. C. I. E., C. S. I., *President*,
- (2) Mr. (now Sir) D. C. Baillie, I. C. S.,
- (3) Lt.-Col. E. H. Rivett Carnac, I. A.,
- (4) Major F. Popham Young, C. I. E.,
- (5) Mr. T. R. J. Ward, C. I. E., M. I. C. E.,

with Mr. L. H. Leslie Jones, I. C. S., as Secretary.

The Colonies Committee began its labours on the 4th November 1907 and presented its report on the 10th April 1908. We shall proceed to describe the changes, executive and legislative, which followed upon the enquiry thus inaugurated.

26. Much the most important of these changes was the bestowal of proprietary rights upon the mass of peasant colonists. These grantees were originally promised no more than a right of occupancy for 20 years. Government now decided to convert them into full proprietors upon the due fulfilment of certain conditions. The arguments in favour of this course were overwhelmingly strong: the danger that thriftlessness and insolvency would follow on the acquisition of proprietary rights, or alienations result on a large scale, had disappeared with the passage of the Punjab Alienation of Land Act. On the other hand custom in the Punjab had always recognised the reclamation of waste lands as conferring a title to proprietary right. Moreover the universal desire of the colonists to acquire these rights was based on no shadowy or sentimental grounds. As tenants they were forced to accept a lower scale of credit than their brethren in the old districts; in arranging marriages they found themselves disadvantageously situated, since the term implied a position of inferiority and insecurity: and lastly, they undoubtedly hesitated to build houses, plant trees and improve their property with as much zeal as if their position were that of full proprietors. The grant of these rights at an appropriate stage would be an immense stimulus to the economic development of the Colony and was in fact necessary to enable it, once the initial period of colonization was over, to pass under the ordinary law of the province. Nor was the power of free alienation, which full proprietors would enjoy, less valuable to society, since restricted alienation could only result in minute sub-division of property and depreciation in the general standard of prosperity. At the same time none but villages established on sound and sanitary lines were to be admitted to the concession, and that only upon the lapse of a certain probationary period and the payment of a commutation fee designed to emphasize the relief from *malikana* involved in the concession.

Residential sites occupied by grantees were made amenable to the same privileges in the matter of proprietary rights as cultivated lands. Sites in the temporary possession of other persons, that is to say tenants, menials, shopkeepers and the like, on the contrary carried with them no rights at all. Whereas, therefore, a peasant grantee would in the course of time become proprietor of his compound, these gentry would never own anything but the materials of which house and courtyard were built.

Incidentally, Deputy Commissioners were to be invested with power to deal summarily with all encroachment or illicit squatting on unallotted Government land.

27. The first intimation to the Colony population of this far-reaching decision was conveyed in a public announcement by Sir Louis Dane on the 14th December 1910 at Lyallpur, to the effect that peasant grantees would be permitted to acquire proprietary rights in their holdings, subject to certain conditions, on payment of a *nazarana* amounting to Rs. 12-8-0 per acre. The conditions, subsequently promulgated, were as follows:—

- (i) Previous acquisition of occupancy rights.
- (ii) The lapse of not less than 15 years from the commencement of the tenancy.

This condition could be relaxed in favour of colonists, especially Janglis, who had established themselves permanently: any such were thus enabled to purchase proprietary rights without further delay.

- (iii) Compliance with the conditions of tenure, especially those relating to payments due, residence and cultivation.
- (iv) Menials' squares and all service grants were debarred from the privilege of purchase, for obvious reasons.

- (v) Deputy Commissioners were empowered to withhold proprietary rights from any body of tenants guilty of gross or repeated encroachment on unallotted land, neglect of ordinary measures of sanitation, persistent indifference to arboriculture, chronic crime or wilful breaches of canal banks.

Widows with a life interest as occupancy tenants, it may here be mentioned, are not permitted to acquire proprietary rights, when there is reason to suppose that their intention is to alienate the holding to persons, who would not be entitled to succeed as reversionary heirs.

28. To this generous offer there was, as might be supposed, an immediate response, which indicated at once the

Effects of the decision. substantial resources of the peasant population and their appreciation of the Government policy. Considering that the payment asked was not more than the average net cash rental of Colony land in a single year, the popular attitude was by no means surprising. The extent of the boon conferred by the bestowal of proprietary rights on these terms is still more vividly illustrated by the fact that the market value of the land, for which Rs. 12-8-0 per acre was being charged, might range from Rs. 150 to Rs. 300 per acre. One effect was to accelerate the completion of the colonization scheme: grantees who had been backward in acquiring occupancy rights were now at pains to make good their deficiencies and so qualify for admission to the status of proprietor. It was only these, or delinquents of the kind contemplated in clause (v) of the conditions, that delayed the fulfilment of the programme outlined in 1910. It was of course purely optional to acquire proprietary rights, but occupancy tenants were seldom prevented by poverty and generally availed themselves eagerly of the opportunity to escape *malikana* and arrive at a position of admitted strength and security. Comparatively few peasant grantees now remain in the inferior grade of occupancy tenant, and fewer still have failed to rise from the humbler station, in which, as tenants-at-will, they were placed at the outset.

The bestowal of proprietary rights in residential sites was postponed to the more urgent business connected with cultivated lands: sites had been generously allotted in the first instance and a somewhat elaborate investigation was initiated into the situation obtaining in each *mauza*. It was not the intention of Government to provide grantees with residential space out of proportion to actual necessity and not effectually occupied. However, this part of the work also is now approaching completion.

29. The necessity for legislation has already been demonstrated. It only

Scope of the legislation proposed. remained to determine the form it should assume. An Act of the legislature was no place for subsidiary objects of colonization, such as sanitation and arboriculture. The policy of Government in these matters would be better attained by rewarding successful effort than by coercion. Nor was it necessary to include in such an Act even the most essential conditions of tenure. The law need only declare all conditions laid down from time to time as binding on those who accepted grants of land under such conditions. The most urgent need was for legislation to enable the Collector to eject persons who held land without title or authority, to deal summarily with encroachments on common land, roads and village sites, and to enforce punishments in the event of contumacy. Some relaxation of the stringency of conditions heretofore obtaining, such as those concerning residence, confiscation without the option of a fine, and subletting, was also indicated. Succession certainly required to be regulated by law: in this connection opinion was unanimous that customary law should be invariably followed and the doctrine of lapse to Government, in the event of a grantee's decease without male issue, clearly repudiated: further, that the nomination of an heir by a tenant without male issue should hold good and the offices of the Collector be only invoked to secure the continuity of the tenancy, where direct issue, widows and nominated heirs were alike wanting. As regards succession to land held in proprietary right, no special provisions were necessary, such land being *ipso facto* liable to the ordinary law of the province.

30. An Act, conceived on these lines and intended as a substitute for the defective Act of 1893, found a place upon the statute-book in 1912. Its main features, in so far as they relate to this Colony, are as follows :—

The Colony Act of 1912.

- (i) Legal effect for all statements of conditions issued or to be issued (sections 10 and 11).
- (ii) Protection of tenancies and animals maintained thereunder from attachment and sale (sections 18 and 31).
- (iii) Rules of succession more favourable to tenants than the provisions of the Punjab Tenancy Act, 1887, hitherto applicable (sections 20, 21 and 23) : saving of service tenancies from the operation of these sections (section 4 and schedule J).
- (iv) Provision of money fines up to a limit of Rs. 100 for breaches of tenancy conditions (section 24).
- (v) Exemption of tenants, upon acquisition of proprietary rights, from conditions heretofore binding upon them, except as regards distributary channels, thoroughfares, mineral rights, boundary marks, arbitration and the like (section 30 and schedule II).
- (vi) Provision for the prevention of illicit squatting and unauthorized encroachment upon Government lands, roads, and canal banks (sections 32, 33 and 34).

31. The vexed question of ground rent is treated in paragraphs 153 to 155. Its kinship, or rather confusion, with land revenue is there explained, and the motives which led to its abolition. That decision involved also the discontinuance of the system of reward grants with which it was the practice of Government to remunerate villages forward in the cause of sanitation and cleanliness, because the reward grants were paid from the accumulations of ground rent, not of course from the public revenues. It was hoped that the provisoos, with which the acquisition of proprietary rights was hedged about, would supply the incentives hitherto afforded by the sanitary grants. No one expected that people could be weaned from careless habits, centuries old, by mere exhortation. But reliance was placed in the power to withhold proprietary rights, where lax and insanitary conditions prevailed, as constituting a strong inducement to successful effort in the right direction.

Ground rent and sanitary reward grants.

C.—THE LATEST PHASE, 1912—1914.

32. Recent years, if not rich in incident, have witnessed remarkable progress in all directions. The wealth of the Colony is attested by the large absorption of gold; by high prices and a general increase in the standard of living—a harvest labourer can often earn Rs. 2 a day; by the remittances in money order form, which have amounted to Rs. 23,21,507 in a single year. The inauguration of the Agricultural College at Lyallpur in 1910 affirmed the claim of the Colony to be regarded as the agricultural metropolis of the province. The Chichoki-Shorkot Railway was finished in 1911, when the market town of Tandlianwala also sprang into being. Jaranwala was then already a going concern—it became the headquarters of a new tahsil in 1913. These two places have attained some fame on account of the enormous prices realized at the auction of sites: the averages were Rs. 283 and Rs. 286 per *marla*. For *zamindars* the chief event has undoubtedly been the reassessment, with which this report is primarily concerned. As regards colonization the record is one of consolidation and improvement rather than innovation. What changes these years have wrought are set forth in the ensuing paragraphs.

Introductory.

33. Colonists have always been possessed by an insatiable appetite

Exchanges.

for exchanges, which they would employ every artifice to secure. It may be said at once that *nazarana* grantees were from the first excluded from all part or lot in exchange proceedings—on the principle of *caveat emptor*. Peasants were not so excluded, because as small holders, subsisting solely on the lands they occupied, they seemed entitled, though in no legal sense, to the best land available. But in dealing with applications of this sort the Colony officers were confronted with a task of unusual complexity. Without wishing to saddle any grantee with land from which at best but a poor return could be expected, they had at the same time to guard against the fraud and misrepresentation which almost invariably obscured each case. Sometimes an applicant hoped to increase the size of his grant in the process: sometimes he wished to secure superior irrigational facilities at the expense of his neighbours: sometimes the land to be taken in exchange possessed the advantage of proximity to the *abadi*—it might even be directly adjacent: sometimes valuable timber standing on the new land was the attraction: sometimes a grantee merely wished to exchange exhausted for virgin soil, in the hope of enhanced outturns for a new cycle of harvests. Not one of these was an adequate ground for action on the part of the Colony officer: but where no fraud was apparent and the applicant could show inadequate profits from his existing holding in a series of years or other sufficient cause, a clear case for redress presented itself. At reassessment, as each circle came to be taken up, grantees were allowed a last chance of asserting their grievances, and a fresh, but final, set of exchanges was allowed. Even though the assessment was adjusted to the capacity of each square, it was more than ever politic to leave no grantee in possession of inferior land, if other and better existed in the waste area. Since in most cases a larger area than before was brought under cultivation as a result of the exchange, the increased return to Government in the form of land revenue and water rate was also a consideration. But in every instance proof of defect in the present holding was adduced by the production of crop returns for recent years, and the Irrigation department were invited to signify their assent as a predisposing condition. These credentials forthcoming and the exchange involving no material injury to the waste area, that is through its dispersal into scattered blocks, sanction would be accorded.

34. Provision was made in the Colony Act of 1912 (section 17) for this

Future policy concerning exchanges.

very necessary detail of colonization. But, so far as the Chenab Colony is concerned, the need for exchanges is now at an end. Exceptional circumstances will of course arise: a land acquisition case may be simplified by exchanging, as a preliminary step, the land in question with a similar area of Government waste—the party acquiring is thus enabled to deal direct with Government and save much friction or delay in the disposal of the case. Again, remodelling of outlets or realignment of channels may sometimes prompt the Irrigation department themselves to recommend an exchange: also, accumulations of silt at water-course heads are bound to occur and waste land is best provided in such contingencies. Or a new village site may be required on privately owned land, which it is desirable to secure by the offer of an exchange. These are special and isolated cases to be decided on their merits. With the acquisition of proprietary rights, including as they do the privilege of free alienation, the mass of colonists must be regarded as irrevocably committed to the *status quo* and prohibited absolutely from further alteration or amendment in the limits and location of their holdings, save by private treaty.

35. In 1911 it became necessary to adopt stringent measures with

Mule-breeding grants.

the mule-breeding grantees, many of whom had long evaded conditions with impunity. A number of holdings were confiscated, other defaulters being punished by money fines. The effect was admirable as regards the remainder, who have since vied with each other in their efforts to avoid the displeasure of the Army Remount officers. The conditions of tenure were amended in 1912,

so as to enable grantees, other than *lumbardars*, to hold land on mule-breeding terms. Confiscated squares are now reallocated, as a rule to deserving persons who hold land in the *mauza* containing them, the original grantee of course excepted.

36. In letter no. 563, dated 1st June 1912, from the Revenue Secretary to Government effect was given to a series of recommendations concerning tree-planting grants. Many of these grantees had observed the conditions of tenure loyally enough; and among *zamindars* generally there were not a few, who followed the exhortations of the colony officers to plant trees on village roads, watercourses and agricultural land and so make good the loss of the jungle trees destroyed as the land containing them came under the plough. But the futility of the tree-planting grants was nevertheless increasingly apparent in the majority of instances. The water intended for the plantations was all bestowed on the cultivated lands of the grantees and the spirit of the conditions wholly evaded. The trees were generally too large for transplantation, too small for firewood or the purposes of the carpenter, and too thickly grown to develop for any useful end whatever. The revenue staff had to devote an altogether disproportionate amount of time to the supervision of the grants, and confiscation was the only available penalty for non-observance of the conditions of tenure. Meanwhile trees were springing up everywhere, and it could no longer be argued that the idea of a wood famine, which had evidently filled the minds of the Colony officers when they started the new venture, was well founded.

The orders of Government disposing of the question distinguished between

- (1) areas occupied by plantations, and
- (2) areas cultivated.

The former escheated to Government and were thrown into the *charagah* area: where this was in excess of requirements, the balance, whether plantation or ordinary waste, was to be regarded as available for sale under the conditions set forth in paragraph 37. The preservation of the nurseries in their natural state as an amenity of village life was to be kept in view, where possible. The cultivated areas were to be left in the possession of *lumbardars* on a yearly tenancy, the *lumbardar* paying *malikana* and all other Government dues. The grants were called *inamdari* leases: they were made to *lumbardars* ex-officio on the same terms as those on which *lumbardari* squares were held, except that no mule-breeding conditions attached to them.

With reference to the spread of arboriculture it may here be remarked that Lyallpur, though classed as an "arid" district, could show 663 miles of avenues under the control of the District Board in 1911, a provincial record: while the Irrigation department, in the area commanded by the Lower Chenab Canal, maintained no less than 1,625 miles of avenues and 4,676 acres of plantations during the same year.

37. A new policy in regard to the disposal of unallotted Colony land was inaugurated by orders of Government which issued on the 22nd March 1912. Hitherto Colony officers had enjoyed a certain latitude in the distribution of the balance available. They were now forbidden to alienate Government land, except by sale at full market value. The Colony officers' powers were further limited by certain other considerations. Facilities were not to be provided for the introduction into village communities by this means of strangers, who would in the matter of caste or religion fail to harmonize with the proprietary body. Colonists, who already held land in the estate containing the available balance and were desirous of securing further allotments, were admitted to have a preferential claim. At the same time it lay entirely within the discretion of the Colony officers to dispose of these lands or not as they thought

fit, and they were at all times to be bound by the rigid rules governing the reservation of *charagah* areas. The effect of these orders was to stem the tide of applicants for land, who besieged the Colony officers at all times with requests as persistent as they were impossible to gratify. Not that the land hunger subsided at once—applicants were still numerous enough and willing to pay almost any price: but the Government order was tantamount to a declaration that the scheme of colonization had been completed, as was in fact the case. Surplus lands over and above the *charagah* limit were extensive enough but often uncommanded and seldom to be compared in quality with the allotted lands, which were now occasionally offered for sale by private vendors. The Irrigation department, moreover, showed that most of their distributaries were already working at full pressure and could bear no further addition to their prescribed capacity. The area available for sale was thus much reduced, and very little land has actually been disposed of in this way. Nor can further allotment on any considerable scale take place without some embarrassment to the Irrigation department on account of the disturbance to existing arrangements thereby created, which ought to be avoided as far as possible.

CHAPTER II.—The Lower Chenab Canal.

38. The Rechna Doab was as nearly as possible an ideal country for irrigation works. The Chenab river afforded an abundant water-supply—its actual recorded minimum is 3,828 cusecs, but the general average is more than double this figure and the period of short supplies is inconsiderable. There were no deep cuttings or other unusual engineering difficulties, and the cost of construction was, by comparison with similar ventures, unusually low. The peculiar fitness of the Rechna Doab for a project of this sort is described at some length in paragraph 163, and its physical features need not be here recapitulated. But despite numerous favourable signs, perhaps no undertaking of the kind ever started with its fortunes at so low an ebb or endured such vicissitudes before attaining fruition. As far back as 1875 a project was mooted, which embraced the whole Doab, but the Government of India declined to embark on a scheme of any magnitude; for in those days nothing short of prophetic insight could have foretold the immense developments in irrigation that were to be, and the attitude of Government was non-committal. The abortive project of 1875 was followed by an inundation canal in 1882, which never irrigated more than 52,000 acres, and failed from the outset. The present canal dates from 1891: it was for the first time since 1875 a complete project, in that it included the provision of a head regulator and weir and the conversion of the old inundation canal into a perennial system: at the same time the passion for combining navigation and irrigation was finally laid aside. The project of 1891 was sanctioned on the 14th July 1892. Meanwhile the Canal had been opened unofficially from its new head in March 1892, when the Rakh and Mian Ali Branches began to irrigate: the Jhang Branch followed in 1896, Gugera in 1898-99, and the canal was officially declared to be complete at the close of 1899-1900. It thus differs from older projects in the greater rapidity of its construction: also, it earned revenue much sooner. Of the steady growth since 1900, improvements effected, dangers met and overcome, it is unnecessary to say more at this stage: indeed, mere words could hardly describe the work of the irrigation officers more eloquently than the following plain and unvarnished facts. The canal was estimated to irrigate 1,100,000 acres and earn a return of 15·64 per cent. in 1914-15. By 1912-13 it was paying 39·18 per cent. on a capital expenditure to date of Rs. 3,09,18,169; while the average area irrigated annually during the three years ending 1911-12 amounted to 2,254,094 acres.

39. The headworks at Khanki consist of a weir 4,045 feet long, divided by piers and cross groynes into eight bays, varying from 441 feet to 515 feet in length. On its left flank are the undersluices with the canal head and subsidiary regulator, which are separated from it by the dividing groyne. Here too in connection with these canal regulators is the left protection bund, four miles

long upstream. The right flank is protected by a Bell's bund up and down stream and by a massive earthen retired embankment, which is carried, in prolongation of the weir, across the low land of the river bed for nearly four miles to the right high bank of the river and then extended as a marginal bund along the higher ground on the right bank of the river. The weir is provided with vertical steel shutters 6 feet \times 3 feet, hinged on to the crest wall and supported from the upstream side by a standing tie rod, which passes through a hole in the shutter and is fastened there by a trigger on the down-stream face. By knocking this trigger aside the shutter readily falls back on to the level surface of the crest wall. A wire ropeway has been erected over the whole length of the weir: it carries cradles, each accommodating two passengers. The main canal regulator has 12 bays of 24.5 feet each; these were originally sub-divided by jack piers into smaller bays, but the jack piers have recently been removed. A subsidiary regulator was added in 1910-11 in continuation of the old one, with 6 bays, also of 24.5 span. In all the bays a set of steel upper gates work from above by means of a travelling crane, while there is also a set of moveable sills rising from the down-stream floor and worked upwards by suitable gearings.

40. Eight main branches of the canal serve the colony area. At mile 28—
Branches. a canal mile = 5,000 feet—the Gugera Branch leaves the main stream. It has a length of 56.4 miles before it bifurcates into two subsidiary branches, the Lower Gugera and Burala, 77.5 and 45.8 miles long respectively. The Burala Branch is nearest to the Ravi. At Nanuana, 40 miles from Khanki, the main line breaks up into the Jhang, Rakh and Mian Ali systems. The Jhang Branch is second in size to the Gugera: 61.7 miles from Nanuana it forms the Lower Jhang Branch, 37.8 miles long, and Bhowana Branch of 7½ miles. The Rakh and Mian Ali Branches are respectively 55½ and 26.9 miles long. Of these branches Gugera and Burala irrigate the south-eastern portion of the Colony, Jhang and Bhowana the north-western, and the Rakh and Mian Ali the central region. The total length of the main lines is 427 miles.

41. There is a magnificent series of distributaries, and a watercourse
Distributaries and watercourses. system second to none in India. The mileage in distributaries is 2,280, in watercourses over 12,000. As every settler is practically guaranteed a supply for his holding, or rather the Irrigation department makes this its aim, the surface levels of every square had to be taken in the first instance. Large scale contour plans were accordingly prepared, from which the village boundaries could be suitably fixed and watercourses constructed with correct capacities, alignments, and gradations; finally, water was delivered at the highest corner of each square, so that the whole could be irrigated by gravitation. The village water course is the unit, from which irrigation actually takes place, and watercourses almost invariably take out from distributaries: there are, however, a few direct outlets on main branches.

42. The table below shows the capacity of the branches and principal
Capacity and discharge. distributaries. It is based upon a full supply factor of 225 acres per cusec for the Rakh and Mian Ali branches and 200 elsewhere. The total supply required at distributary heads is 9,645 cusecs, exclusive of a liberal margin which has to be allowed for absorption in the main line and branches. The authorised full supply is 11,072 cusecs and the actual average during July 1913 was 10,606 cusecs. This is equivalent to about six times the discharge of the Thames at Teddington. There was an average daily discharge in 1911-12 of 9,349 cusecs during *kharif* and 8,180 for *rabi*. Water is always abundant during *kharif*; the *rabi* supply, however, fluctuates and fell as low as 5,877 cusecs in 1899-1900—at such times the *rabi* harvest is gravely endangered. The loss by absorption is estimated at 60 per cent. in all, 5 per cent. in the main line, 13 per cent. in branches, 12 per cent. in distributaries and 30 per cent. in watercourses. Velocities vary between 4.5 feet per second in the main line with full *kharif* supply and 3 feet

per second with low *rabi* supply : in branches they range from 4 feet to 2.5 feet per second, in distributaries from 2.5 feet to 1 foot, according to size and slope.

Abstract capacity statement, Lower Chenab Canal.

Branches.	Capacity in cusecs, excluding absorption.	Principal distributaries.	Capacity in cusecs.
Rakh	... 1,019	Dijkot ... 264	
		Lakhuwala ... 123	
		Deberah ... 73	
		Aruri ... 64	
		Arbi ... 55	
Upper Jhang	... 1,051	Khair Ali ... 53	
		Nasrana ... 280	
		Chiniot ... 204	
		Maduana ... 84	
		Sarangwala ... 72	
		Waghwala ... 52	
Lower Jhang	... 1,172	Burali ... 50	
		Khewra ... 331	
		Dhanlar ... 315	
		Faqirsar ... 81	
		Gojra ... 62	
Bhowana	... 527	Sultan Pakhra ... 191	
		Ghann ... 78	
		Mangani ... 71	
Mian Ali	... 544	Shahkot ... 175	
		Khurrianwala ... 170	
		Mullay ... 99	
Upper Gugera	... 1,091	Mananwala ... 211	
		Gajiana ... 125	
		Nahra ... 89	
		Dangali ... 62	
Burala	... 1,603	Tandlianwala ... 429	
		Samundri ... 255	
		Killianwala ... 239	
		Nupewala ... 56	
Lower Gugera	... 1,731	Tarkhani ... 267	
		Khikhi ... 222	
		Awagat ... 163	
		Mungi ... 160	
		Pauliani ... 107	
		Dabhanwala ... 84	
		Rassiana ... 76	
		Rajiana ... 56	
		Bhail ... 50	

43. The function of an escape channel is to draw off superfluous water from the canal, or in the event of a breach to divert the entire supply pending repairs. The Lower Chenab Canal is well provided in this respect, whereby efficient working is greatly facilitated. The Rechna Doab contained many large hollows admirably suited to the purposes of an escape reservoir. The Budh nala is also used in this way for the Jhang and Bhowana branches, while the

ESCAPE RESERVOIRS, LOWER CHENAB CANAL.

Escape.	Branch.
Marh ...)	Rakh.
Sarfattu ...)	
Kotha ...)	Mian Ali.
Beranwala ...)	Upper Jhang.
(about to be abandoned in favour of a direct escape into the Chenab river at Hinduana).	
Buchiana ...	Upper Gugera.
Bhagat ...	Lower Gugera.
Rodu Korn ... {	Lower Gugera.
	Burala.

nearly equal to the discharge of the branch at the point of exit therefrom.

44. The process of irrigation is regulated by rotational closures, known in the vernacular as *waribandi*. In the summer months the canal runs at full strength, and all its branches are simultaneously supplied : but this is not the case during the winter, except in seasons of unusual rainfall. In the winter each branch usually runs for 10 or 12 days, and watercourses have to work accordingly. Actual distribution is from outlets (*mogha*), of which there may be several allotted to a single village. These *zamindari* watercourses discharge 1

to 3 cubic feet per second. Instead of attempting to irrigate the area commanded by an outlet simultaneously, the whole supply is directed to each square in succession for a limited period (*wari*). Six to twelve hours is the usual duration of a *wari*. The area irrigated by a single outlet is called a *chak*, and *chakbandi* means the distribution of *mauza* areas into irrigation blocks. The period of flow being limited in *rabi* to 10 or 12 days, and the minimum duration of a *wari* amounting to not less than 6 hours, it follows that a *chak* may comprise as many as 40 squares. *Waribandi* within the *chak* is usually arranged by grantees among themselves, when the canal officer adds his formal authorization. In the event of disputes arising the *waribandi* is arranged by the canal officers themselves. Once formally sanctioned, it may not be altered or disturbed. The nicety, with which these claims to water are calculated, is well illustrated by the anxiety to secure the use of the water, which may be flowing in the watercourse between the conclusion of one set of *waris* and the beginning of the next at the outlet head. This is known as the *nikal* and usually falls to the last square on the watercourse, a fact which accounts for a good many exchange applications. For the purpose of irrigation each *killa* of a square is divided into small compartments, called *kiaris*. This process is called *kiaribandi*: its object is to prevent waste of water by attempts to irrigate too large an area at one and the same time, and infringements of the rule are punishable by fine under the Canal Act.

45. The limit of the area supplied with water from the canal is defined by an artificial line, known as the irrigation boundary. It is usually a natural drainage, beyond which it is inexpedient or impossible for canal water to pass by gravitation. It is not coterminous with village boundaries: on the contrary, along the Ravi many *mauzas* are arbitrarily divided into two distinct portions by the irrigation boundary; the *mauzas* so divided are those, which contain an area liable to inundation from the Deg or Ravi and consequently outside the range of canal irrigation. As regards the assessment of land revenue charges the irrigation boundary performs the important function of prescribing the limits, to which the Canal department are confined as an assessing agency. Outside the irrigation boundary the district revenue staff are responsible for the assessment. Further information upon this matter is contained in paragraphs 187 and 188, and in Appendices III A and B the rules for the assessment of land revenue charges within and without the irrigation boundary are respectively embodied. Branches, distributaries and village watercourses have also their irrigation boundaries: each system is a reproduction in little of the larger whole. Areas commanded by distributaries are generally bounded by broad drainage lines (*mahfuza nala*), which invariably follow the lowest contours and are permanently reserved from cultivation.

46. The exclusion of silt at the head of the canal is of paramount importance: silt is a menace not only to the efficiency of the whole system but to the crops themselves, which are endangered by the consequent shortages in supply; and if such shortage occur at a critical period, large losses in revenue must inevitably ensue. Ever since the opening of the canal in 1892 silt was admitted in quantities which varied from time to time but at first constituted no particular danger. Still the silt question could not be ignored for ever and before long it forced itself unmistakably upon the attention of the canal officers. The vagaries of Indian rivers are proverbial and the Chenab was no exception. Record floods in 1903 and 1905 carried away the last of the islands, which formerly existed both above and below the weir at Khanki. This produced an important change in the *régime* of the river. Prior to the floods, the river broke up, as it approached the weir, into several well-defined channels. The silt that formed in these channels was scoured out in flood time, while the main stream, carrying the bulk of the silt, passed over the weir on its right flank away from the canal head. With the disappearance of the islands deep stream was no longer sharply definable: the bed became a series of shallow shoals, no higher on an average than before, but nowhere broken by well-marked channels. About the same time the main discharge worked over to the left of

the weir and with it most of the moving silt, which now gained admission to the main canal.

The new conditions affected most adversely the Gugera system, which takes nearly half the supply of the whole canal. Here the problem presented itself in the most bewildering fashion. The silt appeared to move along the bed of the branch in successive waves. There would be deposits at the head, impeding discharge power, which would suddenly clear only to reappear lower down in the canal. These phenomena would be accompanied by an increased discharge at the head and sudden rise of level lower down, as often as not in a reach of embankment, when breaches would at once be apprehended. Difficulties of this description at the head would repeat themselves in the lower regions. The general insecurity resulting to the crops from this unsettled condition of the supply could hardly be exaggerated. With a head gauge level with that in the main canal, the Gugera system sometimes took no more than 80 per cent. of its normal supply. The Jhang Branch, carrying 2,950 cusecs, had until 1908 always taken its full discharge. In this year it silted up in one of its long reaches and the supply fell to 350 cusecs short of requirements. The canal banks in this locality lacked cohesion: consequently no less than 6 breaches occurred in 1908 and large sums were paid in compensation. And these are not isolated instances. The silt problem was more or less insistent on every other branch and channel of the canal.

Of the remedial measures taken to avert this pressing evil it is not necessary to write at length. Where it asserts itself, greater scouring power is indicated, and this is attained in several ways. On the Gugera Branch there has never been a general clearance of silt, but the main channel is being widened and the size of bridges increased accordingly. The effect of these measures, together with the erection of a dividing-wall upstream of the head regulator at Sagar, has been to increase discharge power, and silt is now effectively eliminated. On the Jhang Branch in 1909 more drastic action was required and taken. There was a general clearance from Sukheke to Beranwala, an operation of no little magnitude but entirely successful. The work was begun and finished on a closure of 12 days: 22,000 *zamindars* were employed at a cost of about rupees 1 lakh and the result was an increase of 100,000 acres in the next *rabi* crop. The Jhang Branch has not since silted up to any serious extent. The smaller distributaries and village watercourses are of course constantly cleared by *zamindars* and growing heaps of silt are commonly to be seen, especially where the channel takes out of the parent stream. Waste space is usually reserved for this purpose. The necessity for a clear passage at watercourse heads cannot be too strongly emphasized and no module or gauge outlet can be successful, or is worthy of general adoption, if it fails in this essential particular.

Much more depends on the measures taken at Khanki to prevent the entry of silt into the main canal. These aim at the admission of a longer and shallower film of water than was originally possible, drawn, moreover, from the surface only. The subsidiary regulator was added and the jack piers in the old regulator were removed, as described in paragraph 39, mainly with this object, to the attainment of which a new permanent crest, four feet higher than before, has also materially contributed.

47. In all canal projects only a definite proportion of the area commanded is destined to receive irrigation: a standard is, in short, provided for the canal engineers to which, though liable to alteration from time to time, it is their duty to conform. The proportion was originally called the *haqq abpashi*, and this is still its popular designation. The phrase is, however, a misnomer and no longer receives official countenance. It implied a guarantee, whereas it is the express policy of the Irrigation department to give no such guarantee. The area proposed for irrigation is therefore now known as the *raqba abpashi mujawiza*.

In the determination of this area various factors had to be considered. Waste spaces are necessary to the health both of men and beasts. In Colony *mauzas* they were created artificially under the name of *charagah*. Proprietary villages were not as a rule so closely settled as to violate this principle of hygiene. Here the Irrigation department had to ensure that the introduction of canal water did not import a new element of insalubrity by suddenly increasing the area under crops. Nor was it desirable that people already provided, as in the proprietary villages, with the means of irrigation, albeit laborious and not highly remunerative, should be demoralized by too easy access to new sources of supply, in the proper use of which they were without experience. Most of all, the evils of water-logging, so insidious in its approaches, so inevitable in its ultimate disastrous consequences, dictated prudence from the outset.

48. The policy of Government in reference to this question is contained in the following extract from instructions, issued on July 1st 1901 by the Chief Engineer, for the restriction of irrigation in the *khadir* parts of the Lower Chenab Canal :—

Policy of Government.

“It is agreed that the only test of the volume of water poured on to the land, which can be readily applied at present, is that of the area irrigated, as it may be safely said that this area will be generally in direct proportion to the volume used, if the crops are to be matured. The tendency to water-logging will be gauged by the rise of the spring water level, and in the *khadir* tracts of the Chenab Canal this must be carefully watched by means of the biennial well measurements.

As a tentative measure the following scale has been approved for the percentage of the gross area commanded to be irrigated annually :—

Depth of the spring water-level below ground,	Percentage of gross area of village, which may be irrigated.
40 feet or more 	50 per cent.
25 to 40 feet 	40 per cent.
Less than 25 feet 	25 per cent. or <i>khariif</i> irrigation only.

No promise should be given to the villagers of any definite percentage of irrigation, but it should from the first be explained to them that the supply will be reduced as the spring level rises. . . When the Executive Engineer finds that the spring level in any series of villages has risen and is about to pass from one range of depths to another in the scale given, he should, with the approval of the Superintending Engineer, inform the Deputy Commissioner . . . and request him to warn *zamindars* that the spring water level is approaching the limit, at which a lower percentage of irrigation must be enforced, and that a reduction of supply will, if the subsoil water continues to rise, be made from the beginning of a crop to be named. It is of the utmost importance that timely notice should be given so that the people may adapt themselves to the change It is not the intention of Government that the rules should be worked harshly, arbitrarily or with mathematical accuracy, and the object of issuing the notices through the district officer is that he should satisfy himself that due notice is being given of the intended restriction of irrigation, that no changes in the methods of husbandry are involved, that the restriction is not likely to cause desertion of tenants and their migration to better-irrigated lands, or that there are no special circumstances peculiar to the tract, which would suggest the expediency of postponing the restriction.”

49. The arrangements now obtaining in the Chenab Colony were designed, pursuant to these orders, in 1907. The proportion proposed to be irrigated is now as follows for the area included in this settlement :—

Present position as regards the area proposed for irrigation.

- (1) Proprietary villages, 50 per cent. of the culturable area.
- (2) Colony villages, 75 per cent. of the area allotted or available for distribution.

Exceptions.—(a) The percentage in Colony villages on the Bhangu, Dhaular, Sultan Pakhra, Fecder, Mangani and Ghanu distributaries is 66 per cent.

(b) The percentage in Colony villages on the Dangali distributary, below the High Bar, is 50 per cent.

In Colony villages the calculation is made on the area remaining after land classed as *charagah* and *ghairmumkin* has been excluded. Seventy-five per cent. of the allotted, is substantially equivalent to 50 per cent. of the gross, area.

50. An examination into water levels may appropriately follow these remarks on the policy and practice of the Irrigation department in connection with the *raqba abpashi mujawiza*. The statistics tabulated are for well measurements annually recorded by the department; they are arranged with due attention to the physical conformation of the Colony area, which is the cause of such variations in the water-level as are to be found.



Subsoil water-level.

Name or no. of chak.	Situation.	DEPTH OF WATER IN FEET.										Average annual rise (+) or fall (-) in feet.
		1904.	1905.	1906.	1907.	1908.	1909.	1910.	1911.	1912.	1913.	
629, Gugera Branch	51.80	49.80	46.68	42.15	35.27	36.95	36.06	35.55	34.38	+ 2.18
Mehr Shahana	14.30	13.55	16.51	19.51	15.50	16.04	12.19	11.79	17.00	- .34
84, Rakh Branch	...	82.95	81.80	80.00	78.60	77.25	73.50	72.40	69.25	68.10	65.80	+ 1.90
232, Rakh Branch	91.50	89.50	87.00	86.30	84.34	82.05	80.00	78.40	76.94	+ 1.82
395, Gugera Branch	...	61.24	60.92	59.00	58.28	57.33	54.12	53.48	52.67	51.46	50.33	+ 1.21
430, Jhang Branch	...	52.75	52.43	51.00	50.68	48.23	49.10	44.59	43.64	42.04	41.27	+ 1.28
492, Jhang Branch	29.45	28.88	28.23	26.73	24.87	24.54	24.44	24.04	23.55	+ .72
Kot Umar	16.40	17.25	16.93	16.75	16.10	15.95	14.73	15.48	15.46	+ .10

The danger zones will be at once apparent. In the High and Middle Bar, descriptive terms which explain themselves, the steady rise at the rate of 1 to 2 feet per annum is disquieting, but the day of reckoning is still far off. In the *khadir* areas it has already arrived and the reduction to 50 per cent. on a portion of the Dangali distributary and in all the Proprietary villages, however unfortunate for cultivators settled in those regions, can be justified as a protective measure. The latter are old-established *mauzas* with wells of considerable antiquity, from which water is regularly drawn at no great depth for the purposes of agriculture; and where well irrigation exists already, as here, or requires but the stimulus of enterprise to call it into existence, which is the case on the Dangali, it is surely not the function of the Irrigation department to supply canal water so lavishly as to render wells unnecessary. The two methods are in fact often most happily combined, the wells counteracting shortage in supply from the canal at critical periods. That a similar reduction in supply was not enforced on the Bahlak distributary is due to its rather exceptional circumstances. The Bahlak was infected with *reh* to such an extent as to justify special remedial measures, which took the form of auxiliary supplies of canal water intended to wash out the noxious salts: the settlers were also largely canal grantees on 20 year leases and therefore unlikely to invest capital in wells. The 75 per cent. limit was therefore retained. Reductions in the Chenab *khadir* are even more drastic; on the six distributaries, where Colony *mauzas* are only permitted to irrigate 66 per cent. of the area available for allotment, proprietary villages are actually restricted to 40 per cent. of the culturable area. These latter, however, lie outside the scope of this settlement.

51. That these preventive measures are not superfluous is clear from a survey of conditions at Hafizabad.

Water-logging : its dangers and remedies.

Here water-logging has reached the acute stage, and irrigation is not only unnecessary, but positively injurious. Certainly conditions are exceptional at Hafizabad, because the bed of the canal is below the surrounding water-level and as a result permissible irrigation has been reduced to a minimum and distributaries actually closed down. But experiences at Hafizabad illustrate the potential dangers from water-logging for larger areas, if not the Colony as a whole. The curtailment of irrigation is only one of the unfortunate effects to be apprehended. The physique of the agricultural classes is also gravely endangered, for a malaria-ridden peasantry cannot hope for other than weakly offspring. That is a reflexion, which must give pause to the ardour of the keenest enthusiast for the spread of irrigation. The problem that lies before the experts is, in short, how to reduce the diffusion of water without at the same time diminishing the area under crops. The latest view attributes water-logging less to excessive surface irrigation than to the passage of large volumes of water down the main channels. The danger becomes acute when, as happens near the Gujranwala and Jhang district boundaries, a large branch runs close to the riverain area. To meet the evil it is necessary to rely on waterproofing the main canals or the conversion of perennial distributaries into *kharif* channels. The latter course, in that it prevents percolation through the bed and side slopes of watercourse channels for half the year besides stimulating well construction for the irrigation of *rabi* crops, undoubtedly checks the rise of spring level: but it is an extreme measure, at present postponed in favour of less drastic remedies, though supplies are being cut down where irrigation exceeds the designed percentage. Waterproofing is a costly but effective process with much to recommend it, and attempts are now being made experimentally to staunch the canal by this means. The principal linings in use are puddle clay and cement plaster of varied composition. A substantial layer of clay is employed near Hafizabad, because a thin cement lining would not withstand the pressure from the surrounding water. Further down conditions are more favourable to cement. The cement is mixed with silt and laid to a thickness of $1\frac{1}{2}$ inches upon the bed of the canal, which has first been excavated to a depth of some 2 feet and then suitably prepared. Side slopes are not at present treated. The lining is afterwards covered with the excavated earth and the canal is again ready for service. That this process will be of permanent value is now generally admitted:

and it is thus that Irrigation officers hope to lay the spectre, which looms so large in the future of irrigation.

Nahri areas allotted, cultivated and matured, showing averages of five years.

Branch or circle.			Area allotted.	Area cultivated.	Area matured (<i>nahri</i>).	Percentage of matured to allotted area.	Percentage of matured to cultivated area.
			Aeres.	Aeres.	Aeres.		
Jhang Branch	...	...	540,032	503,121	480,801	89.0	95.5
Gugera Branch	...	...	689,484	676,093	660,120	95.7	97.6
Rakh Branch	...	...	455,606	434,155	419,642	92.11	96.6
Extensions	...	...	127,899	112,463	94,101	73.5	83.7
Proprietary villages	...	...	...	43,865*	17,327	...	39.5

*Culturable area within the Irrigation boundary.

52. The actual performance of the canal department, which will now be examined, habitually exceeds their own provisional estimates by a considerable margin. This is evident from the table at the head of this paragraph, which includes *nahri* cultivation only under the heading "Area matured". There are some important deductions to be drawn from these statistics. The percentage of allotted area matured is highest on the Gugera Branch, where soil is uniformly good, and lowest on the Jhang Branch, where conditions are adverse, the Rakh Branch being intermediate in this particular. The Extensions cannot properly be compared with the older branches, because they are of more recent date and at least 10 years are required to bring allotted areas under cultivation to the fullest possible extent. The labours of the Irrigation department are reflected in the statistics showing the proportion of the cultivated area brought to maturity. Everywhere, except in the case of the proprietary villages, where large areas of *chahi*, *sailab*, *abi*, and *barani* cultivation also exist, they have more than fulfilled their obligations. No amount of captious or adverse criticism can detract substantially from the merits of this remarkable achievement: and if general averages alone had to be considered, if the system of record on which these statistics are based left no loophole for error, the Irrigation department would be entitled to unqualified praise for the success, which has clearly attended their efforts. But the reservations are significant, and we must see what truth there may be in the implications they convey.

53. To take first the system of record—that is, the system which assumes the area irrigated to be a sufficient test of the volume of water supplied—there are a number of reasons other than water-supply, which may bring about an increase or decrease in the area under cultivation. The water-supply of a village is not in direct proportion to the percentage of its area matured. Outlets themselves vary greatly as to capacity, the quantity for unit area being in some cases double what it is in others. No doubt every effort is made to compute the size of outlet required with due regard to the relative levels of the water in the canal and the land, to which it is to be

Inadequacy of the system of record.

applied. This is in fact a vital consideration, because the extent of the matured area is largely dependent on the command from the canal, since land at low levels obviously has an advantage over land less efficiently commanded. But the quality of soil is also an important factor, both as regards absorption in the village channels and its ability to transfer moisture to crops. Moreover a perfect system of record should show how the various agricultural communities differ in their knowledge of the theory and practise of irrigation— and differ they do very largely—generally appreciate at its proper value the human element in what is anything but a matter of science pure and simple, and recognise the intermittent nature of the flow of water down the channels and the effect thereon of droughts, rains and similar visitations. These are some of the conflicting influences, which have to be appraised before the sufficiency of water-supply can be gauged with any approach to accuracy: it will hardly be maintained that statistics of areas irrigated reveal them all.

54. Nor will the figures themselves survive a searching inquisition.

Excess and defect in supply. True, they show a sufficiency of supply in the canal as a whole and in its main divisions taken separately. But a detailed survey of distributaries *seriatim* shows that perfection is some way off. The *mauzas* at the tail of nearly all the Gugera and Burala Branch distributaries are still in a state of chronic distress. Mr. de Montmorency said the same of some of the Jhang Branch channels (Waghwala, Kot Ahmed Yar, Kot Wasawa), and Captain Ferrar of others. It may here be observed that the length of a distributary is as a rule in inverse ratio to the efficiency with which it fulfils its functions. The important Nasrana distributary (Jhang Branch) is an instance of this, complaints at the tail being very frequent. So was the Shahkot distributary (Mian Ali Branch), till it was supplied with Gibb's modules, of which more hereafter. Rotational closure of village outlets is the conventional remedy in such cases, but the remedy is sometimes, by reason of the friction it engenders, worse than the disease. Outlet reduction is a safer course and, upon the merits of individual cases, usually the course dictated by justice and expediency. For if tails still suffer from shortage, while the average for the whole canal is nevertheless unusually high, there is an obvious inference. Some *mauzas* are getting too much. And the excessive supply enjoyed by many head villages is capable of becoming a positive evil. At a time when tail villages on the Nasrana were far below their proposed supply, Mr. de Montmorency discovered that some villages on the same distributary, originally sound *mairas*, were developing *kallar* in patches. He was inclined to attribute this to over-irrigation—which is a plausible theory as to the causation of new saline deposits, if not conclusive. Again, at the time of reassessment on the Rakh Branch *zamindars* commonly pleaded excess of water and consequent soil exhaustion in mitigation of the new demand. Not to amend conditions so inequitable as those described above, where they occur, would savour not only of impolicy, but almost of incompetence, and of course the Irrigation department is entirely innocent of any such intention. On the contrary its present activities are wholly directed to the removal of such imperfections, as were, in the phenomenal rapidity with which the canal expanded and developed, of necessity overlooked. Of these activities mention will now be made.

55. First, the distributaries themselves need constant attention: it is

Present administrative policy. not enough that contour plans should show a favourable line of country with a steady fall and an absence of troublesome undulations. Nature will not be balked of her caprices: the mysteries of command remain in many cases unsolved to the end: some distributaries silt up unaccountably: some carry too strong a head of water, when, if the banks be high, breaches will ensue. Of absorption, of the difficulty experienced in working very long distributaries, mention has already been made. These are all problems to be met and overcome by patience and resource. A new head will often counteract the accumulation of silt: this method was successful in the case of Pauliani, Rassiana and Mullay. One or two, such as the Awagat and Phadiara, which

failed to give satisfaction through excessive length, were cut in two. The same difficulties reproduce themselves on a smaller scale in the case of village watercourses: sometimes realignment is necessary: sometimes the *chakbandi* is faulty: sometimes the watercourse outlet needs to be adjusted. Upon the last point more will be said hereafter: but we must first refer briefly to a recent innovation, which bids fair, in the opinion of many, to revolutionize all preconceived ideas upon the subject and completely supersede existing methods, namely the experimental introduction of modules.

56. The object of a module is to ensure the delivery of a constant supply of water from a distributary into a watercourse, whatever the variation of level in the channels, and a good module should equalize supply when command varies. The greatest obstacle to effective distribution has hitherto been the want of such a module and this want is now being supplied. Only two types are at present in use on the Lower Chenab Canal, Gibb's module and Kennedy's ratcable gauge outlet, and these alone will be here mentioned. Others are in the air, for a satisfactory module is a pressing need and the quest is keen, but they do not concern the present discussion.

The first of the two types approved for experiment, Gibb's module, is described in the assessment reports (Gugera Branch II, paragraph 9, and Rakh Branch, paragraph 9). It is fitted throughout the Shahkot distributary, and the results may now be estimated with some degree of accuracy. Between 1908 and 1911 the quantity of water poured over the country diminished by 3·8 per cent., while the irrigated area increased by 20 per cent. The tail villages, long insecure, have received a much improved supply. This remarkable change is attributed by the Irrigation officers partly to improvement in the *régime* of the distributary channels and a new *chakbandi*, which Mr. Gibb introduced, but mainly to the modules, which they consider to have given practical proof of capacity to pass only their designed discharges within a large range of head. The view of the Irrigation officers is fortified by the absence of the usual complaints from *zamindars* on this distributary: it is true that the Shahkot colonists do not positively admit improved supplies: such admissions would not be in keeping with the bucolic temperament, but of the actual improvement there can be no doubt. सत्यमेव जयते

Kennedy's module exists on various distributaries, Churki, Sarangwala, Bilochwala, Dangali, Nasrana, but nowhere throughout the whole length of a single channel. It is cheaper than Gibb's and allows for a certain fluctuation in discharge, which accords with conditions on the Lower Chenab Canal, where supply is liable to fluctuations, Gibb's module being defective in this particular. On the Dangali distributary the modules fixed on the upper reaches have secured to tail *mauzas*, which are not so equipped, a much improved supply. The moduled *mauzas* complain of shortage, but that is because they only receive a supply calculated to water 50 per cent. of their allotted area. The modules themselves have provided what was expected of them, a constant supply strictly proportionate to the need of each holding.

57. That modules are destined to play an important part in future schemes for equalizing distribution will hardly be gainsaid. The types at present in use may be imperfect, costly, capable of being tampered with—indeed, the experimental stage is not yet past, and so momentous an innovation as this can only hope to win its way to general acceptance after many vicissitudes. But their substantial accuracy, as well as their vast superiority to masonry outlets, is undisputed. Reference has already been made to some of the dangers, which threaten the continued success of the Colony, if supplies are not restricted to actual needs. There is the danger of water-logging, there is the deterioration of the soil through excessive irrigation—for the capacity of soil to retain moisture increases, as the process of saturation advances. The most painstaking class of cultivator will, moreover, eventually be demoralized, if the means of cultivation are made too easy; whereas by reducing the

supply to the minimum proposed the value of water will appreciate and it will be more economically used. Immediate benefit will result to many tail villages, who will secure the proper share of water of which they are at present often very unfairly deprived, and a large bulk of water will be liberated, which may be usefully employed on new extensions or counteract possible loss, when the Triple Project has finally matured. These are large demands to make on behalf of a new and as yet unproved invention, but they have the weight of high authority. The Financial Commissioner, in his review of the Rakh Branch assessment report (paragraph 15), wrote:—"I am convinced that it would be an immense gain to the administration to fix modules on the outlets of most of the watercourses taking out from the head and middle reaches of many distributaries." It has not been demonstrated that modules should be supplied throughout the whole length of distributaries. In head reaches during keen demand the upper outlets flood their land beyond requirements, and the tail supply is endangered; modules in the upper reaches assist the manipulation of the supply to tail villages at such critical periods, the tail villages themselves being left in their original state. Also, stability in channel conditions is essential to their proper working, and in the early stages of canal development such stability is lacking. But, subject to these provisos, the introduction of modules on many more distributaries could hardly fail to be beneficial to their effective working.

58. Equality in supply, whether by reduction where it is in excess, or by increase where it is deficient, is perhaps the most important of present

Outlet reduction.

needs, and it must be considered apart from modules. Those who believe the best results to be obtainable by the general use of modules would be grievously disappointed, if their introduction were indefinitely postponed or altogether abandoned. For economy and prevention of waste are at present largely stultified by the difficulties experienced in recording the performances of masonry outlets with a view to their alteration. Yet an adverse decision on the subject of modules as a practical issue would not affect the merits of the case for redressing any evils, which may now be found to exist. The Irrigation department is at present embarked upon a systematic policy of outlet reduction, designed to ensure to the remotest watercourse its apportioned supply—a policy in itself admirable, but calculated, unless it is carried out with the utmost caution, to defeat its own ends. It would be an exaggeration to say that the dangers to be anticipated from over-irrigation are as yet very real or very vital. On the other hand there is probably no branch of Colony management, which provides more openings for extortion and illegal gratification than the regulation of watercourse outlets; and no act of a canal officer can be productive of so much discord or give rise to so much misconception and even unrest as a proposal to cut short supply. These considerations are generally sufficient in themselves to predispose the officers responsible in favour of circumspection, though they should not avail to impede the furtherance of the most trivial scheme, if a point of justice is involved.

59. Among the most essential of the conditions, requisite to a case for amending existing arrangements, is the presence on the same distributary of

Suggestions for the equalization of supply.

mauzas drawing respectively more and less than the permissible minimum. There is no question of effecting a general reduction in supply throughout the Lower Chenab Canal: neither the Triple Canal project nor any other impending scheme involves the withdrawal of a single cusec from this canal. And until the distributaries themselves have attained much greater fixity in their internal economy than they possess at present, there can be no urgent need to increase the supply of one distributary at the expense of another. What is still incomplete in many instances, and therefore in need of adjustment, is the allotment of supplies by village watercourses, especially in tail *mauzas*. On the older branches this is happily no longer the case: the Rakh Branch shows few distributaries, which are not satisfactory even to the very end. Arbitrary reductions here for no definite purpose would have no ground of justification and only excite needless opposition, which it is politic to avoid. Elsewhere if,

on the same distributary, one *manza* is getting too much and another too little, it is a manifest injustice not to intervene in favour of the weaker *manza*. Indeed, as far as the dangers of over-irrigation are concerned, the diffusion of water over wide areas is less calculated to raise the subsoil water-level than concentration of supply within limited areas. At the same time it is necessary to enter a *caveat* against a too servile acceptance of statistics for irrigated areas. It is not that these statistics are no guide at all, but they are an uncertain and not an infallible guide. There are other considerations just as pertinent to the enquiry. A large area of crops irrigated may only mean, for instance, imprudence in the use of a moderate supply from the canal. The human element, to which allusion has already been made, is a momentous issue: whether the colonists be capitalist, yeoman or peasant: if peasant, whether they be indigenous or immigrant: their previous experience, if any, in irrigation: their qualities as settlers: extent to which they cultivate in person: the fact of personal residence or substitution of a local manager. The *pargana* note-books maintained by the Collector contain information on all these points and may with advantage be studied. The evidence to be gleaned by actual crop inspection is perhaps most valuable of all. If there is water enough the crops will show it: for water cannot be disposed of clandestinely and hidden from view. And the final decrease should be gradual: the permissible minimum must be approached by easy stages, not a single *per saltum* reduction. Above all there should be no corresponding rise in the duty per cusec, or the reduction becomes a two-edged calamity. The full supply factor is at present 225 acres per cusec on the Rakh and Mian Ali Branches, elsewhere 200. There may be good reason for this variation, though why a cusec of water on the Rakh Branch has a larger range of duty than on the Jhang Branch, for instance, is not *prima facie* apparent. However, it is only necessary at present to emphasize the point that any alteration in the supply factor is not less important than an alteration in the supply itself, and that a proposal to raise the supply factor requires to be justified as much as a proposal to cut down an outlet. Neither the one nor the other should be attempted without good cause and due deliberation.

60. There are three schedules of occupier's rates at present in operation within the area included in the Colony Settlement. They are shown in detail as Appendix II to this report. Schedules A and B apply respectively to the Proprietary and Colony villages. Except in the case of gram (Class VIII) the rate now in force in the older villages is in each case 8 annas higher than the corresponding Colony villages. It was proposed in 1911 to apply the occupier's rates prescribed for old villages to the Colony *mauzas* as they came under assessment. That one schedule instead of two should operate in the Colony area was clearly in the public interests. Still, the proposal involved an increase of 8 annas in the water rate on nearly every class of crops for Colony *mauzas*, and on this ground the Government of India postponed consideration until some years should have elapsed and experience had been gained of the working of the new land revenue assessment, in view of the very considerable enhancement involved in that assessment, though moderate enough in itself.

It was at the same time decided to differentiate occupier's rates in favour of villages, where, owing to inferiority of soil, the profits of cultivation are so low that differentiation in land revenue rates was not in itself sufficient to meet the case. This was one of the recommendations of the Colonies Committee, submitted for final disposal to a departmental Committee in 1910. A decrease in classes IV and V of the schedule published in notification no. 31-1 of 6th January 1892 (B of Appendix II) was accordingly sanctioned by notification no. 112 R. I., dated 30th January 1912. The reduced rates are printed as Schedule E in Appendix II. Only Colony *mauzas* are eligible for this reduction. Selections were made by the Settlement Officers for each circle as it came under assessment. The *mauzas* enumerated in section F of Appendix II are those in receipt of the

special concession. Out of 1,425 colony *mauzas* 113 benefit under the new scheme. This very tangible advantage is not sufficiently appreciated by critics of Government or even by *zamindars* themselves. The precautions against error or severity in assessment deserve a wider publicity than they have received. Thus on Class IV crops, which include cotton, wheat and *toria*, the reduction amounts to no less than 12 annas per acre, while Class V crops (gram, *bajra*, etc.) pay 8 annas less than before. The introduction of this Lower Schedule is to some extent a counterpoise to the abolition of *kharaba*. But the criterion is different in each case: *kharaba* is retained only when water-supply is uncertain: the lower schedule on the other hand presupposes nothing beyond adverse soil conditions. The net result is that water rates are normally levied on sown areas; but where water is deficient the assessment is on the area matured: and where poverty of soil precludes the hope of a full harvest, the water rates are reduced.

CHAPTER III.—The Colony population.

A.—CENSUS STATISTICS.

61. Separate population statistics are available for the Colony area, the totals being as shown in the margin. The figures for 1891 are probably exaggerated. The census of that year was taken in the cold weather, when the regular nomad population was largely augmented by graziers from the riverain villages. In 1901 only 61,610 persons were entered as speaking "Jangli", and it is probable that the nomad population of the Bar did not exceed this figure before the advent of the colonists. The 1906 census was peculiar to the Colony and not connected in any way with the Imperial undertakings of 1901 and 1911.

CENSUS STATISTICS.				Population.
Year of enumeration.				
1891	...	...	...	112,286
1901	...	...	...	780,674
1906	...	...	...	863,244
1911	...	...	...	1,105,997

Of the 1911 total, some 548,207 persons were immigrants, born outside Colony limits. Placed side by side with similar statistics for 1901, the figures are instructive. The districts quoted are those which contributed settlers in the largest numbers. Preference was given to the best cultivating castes in congested areas. The heat and burden of the day may be said to have been borne by the sturdy peasants of Amritsar, Jullundur, Gurdaspur, Hoshiarpur and Ludhiana, who have settled down in increasing numbers as permanent residents of the Colony: and the palm for successful and efficient colonization must rest with them. Gujrat and Sialkot are too near: with the easy communications prevailing the temptation to revisit the old home is irresistible, nor are the cultivators of these districts so well fitted by temperament or constitution to adapt themselves to new conditions as their hardier brethren from the central Punjab. With the acquisition of proprietary rights it is to be feared that the homing tendency will assert itself increasingly.

STATISTICS OF IMMIGRATION.				1901.	1911.
District of origin.					
Sialkot	...	103,390	96,984		
Amritsar	...	67,963	81,144		
Jullundur	...	56,983	70,847		
Gurdaspur	...	43,593	52,701		
Hoshiarpur	...	35,099	41,234		
Lahore	...	28,620	28,176		
Gujrat	...	25,352	25,174		
Ludhiana	...	17,807	28,306		

Some 557,790 persons were returned in 1911 as born within or near Colony limits. This of course includes the children of immigrants, but even so the immense increase in the indigenous population is a very remarkable feature in these statistics. It was in the first instance the dry unproductive nature of the soil at home or the injury caused to riparian lands by the diversion of river water to the canal colonies, which induced cultivators from Jhang, Montgomery and Gujranwala to resort to the newly settled areas in search of land or employment. The success of the Colony is primarily due to the immigrant settlers, who

brought with them and firmly established the best agricultural traditions of the Province, but the part played in the development of the scheme by the aboriginal communities was both conspicuous and extensive. The grants of land they received were large enough, if not so large as the immigrant allotments. Not all were consistent in their allegiance to the Colony. The riverain grantees have frequently incurred the displeasure of the Colony officers for chronic absence in the old home. But the landless nomad of the Bar made an admirable colonist, because he had no temptation to reside elsewhere and generally cultivated his land in person. The weak point in the immigrant world is the want of natural leaders. The heads of the Jangli clans are, on the contrary, genuine aristocrats and often men of intelligence and ability: they exercise a patriarchal authority over their followers and are of real assistance in checking the tendency to crime, to which the aboriginal population is still unfortunately addicted.

62. Among the immigrants there are 700 females to every 1,000 males.

Sex distribution. The figure for the province is 817. Very few females came at first, but as each caste settled down the proportion of females increased, while that of the children decreased. The figures in the margin illustrate this tendency. Thus

SEX DISTRIBUTION—IMMIGRANTS.			
		<i>Proportion per mille.</i>	
<i>Caste.</i>		Of females to males.	Of children under 15, born outside the Colony, to total population.
Kamboh	...	903	223
Mazhbi	...	899	192
Arain	...	773	204
Jat	...	728	209
Gujar	...	529	208
Pathan	...	288	205
Musalli	...	882	269
Changar	...	843	339
Machi	...	778	249
Chamar	...	763	252

amongst the earliest settlers, show a larger proportion of females than any other caste, though the number of children under 15 born outside the Colony is less remarkable. The immigration of Jats and Arains is also of a permanent type. Gujars and Pathans, notorious absentees, have not yet settled down properly. The menial castes, on the other hand, are well established, having also brought large numbers of working children with them. The percentage of children for the whole Colony is above the provincial average and indicates prosperity. There was a tendency at first for immigrants to marry in their old districts: but the antipathy to Colony brides is now largely a thing of the past, though the contracting parties are usually immigrants from the same district. The dearth of females was also responsible for a traffic in low caste women, who were sold into the Colony. There has always been and still is a rooted aversion on the part of the aboriginal inhabitants from intermarriage with immigrants.

The same stringency as regards women does not obtain among the aboriginals, whose marriage customs, moreover, are or were in many ways admirable. Female infanticide is very rare and divorce uncommon. It used to be the custom for Janglis to marry very late, the men between 30 and 35, the women between 25 and 30. To this salutary rule their fine physique is doubtless mainly due. Large families were hard to rear and the marriage of daughters not easily effected. But material prosperity and the bad example of the immigrant population has changed all this. Janglis now marry much earlier. Apparently the promise of a son or daughter in marriage can no longer be relied upon, unless marriage follows quickly upon betrothal.

63. In the Census of 1911, 72 per cent. of the inhabitants of the

Language.

Lyallpur district are returned as speaking Punjabi and 26 per cent. "Lahndi."

This may fairly be taken as true of the whole Colony area. Lahndi is the name now given in linguistic literature to the group of dialects formerly described as Western Punjabi. The Colony dialect is locally known as "Jangli" or "Bar di Boli" and forms the connecting link between Multani and Standard Punjabi. The immigrants of course brought with them the language of their old districts and consequently every variety of Punjabi is found.

64. A remarkable feature in functional distribution is the fact that nearly every caste is dependent upon agriculture. Even the indolent Mirasi appears occasionally as a tenant, and the Batwal or Barwala, by profession a *chaukidar*, here and there applies himself to agriculture. But, broadly speaking, Jats, Balochis, Mazhbis, Sainis, Kambohs, Mahtams, Arains, Gujars and Rajputs live by cultivation: field labour is recruited from Chamars, Chuhras, Batwals, Musallis and Changars, while among the weavers are found Kashmiris, Paolis, Barwalas and Chamars. Aroras, mainly from Montgomery, Jhang, Multan, Shahpur, Amritsar, Gujrat and Sialkot, are the principal money-lenders and shopkeepers, being assisted in the latter calling by Brahmans, Khojas, Khattris and Kashmiris. The trading classes are generally known as Kirars. Almost every caste, except Chamars, Batwals, Nais, Changars, Kumhars, Mahtams and Chuhras, are found in Government service. Apart from their occasional diversion to other pursuits, as indicated above, the artisan community, Tarkhans, Lohars, Mochis, Paolis, Kumhars, Machhis, Mirasis, Dhobis, Telis, Nais, Barwalas and Batwals, as a rule follow their traditional occupations. The majority of Chuhras are still scavengers pure and simple, and of Chamars those not occupied in agriculture and weaving are usually shoemakers or tanners.

B.—DISTRIBUTION OF LAND BY CASTES.

65. The distribution of the allotted area by castes will now be considered, together with their relative merits as colonists and cultivators. The tribal composition of the body of grantees in an assessment circle is a matter of the first importance in estimating its capacity to pay revenue: there are variations in soil and inequalities in water-supply, but the strength or weakness of a circle ultimately depends on the agricultural character of those who hold the land. The following statistics refer to the Colony as a whole: the disposition of the cultivating castes by circles will be considered hereafter. The tribes are first classified as immigrant or indigenous: they are further distinguished by religions, and in the case of immigrants their origin by districts is also indicated. The indigenous tribesmen are all natives of Lyallpur, Montgomery, Jhang or Gujranwala and they are grouped under two heads—Hithari and Nomad. It is not possible to discriminate very accurately between those two designations from the racial point of view, for the same tribes appear and reappear in both categories. Hitharis were landowners, selected by Deputy Commissioners for colony grants: the Nomads had a residential qualification but no land, and they were selected by the colonization officer. The difference would appear to be trifling, but it had nevertheless a far-reaching effect in determining their respective merits as colonists. With the Hithari the proximity of the old home is a constant distraction: only too often he cultivates vicariously and is content with occasional visits to receive his share of produce. The Nomads, on the other hand, developed unexpected qualities, of which mention has already been made in paragraph 61 and more will be said hereafter. All classes are remarkable for the conservatism, with which they cling to the habits and customs of their forefathers—*caelum non animus mutant*—and the immigrant *mauzas* are portraits in miniature of the parent district, just as the indigenous settlements reproduce on an ampler scale many of the characteristic features of village life in the western Punjab. Climate is at present probably the most potent levelling influence. Gloomy prognostications are uttered from time to time upon the evil results to the physique of the people, likely to ensue from continued canal irrigation. No general decadence, however, is as yet apparent to the casual observer in the health or stamina of the Colony population: on the contrary, immigrants from milder regions have been visibly stiffened by the rigorous climate of the Bar, though the advent of canal water has to some extent mitigated the harshness of the indigenous races and perhaps diminished their virility.

Distribution of land : (i) Immigrant—64·6 per cent. of whole Colony.

Religion.				Caste.	Percentage.
Hindu	...	...	...	Jat ...	23·67
				Kamboh ...	2·45
				Saini ...	·87
				Rajput ...	·52
				Miscellaneous ...	4·8
Christian	...	...	...	Miscellaneous ...	·61
Government departments, Municipalities, District Boards, Army Re-mount department, Cavalry Stud farms.					·7
Musalman	...	...	...	Jat ...	12·31
				Arain ...	10·7
				Rajput ...	2·75
				Pathan ...	1·43
				Gujar ...	1·22
				Kamboh ...	·56
				Miscellaneous ...	2·51

66. Hindu Jats hold 23·67 per cent. of the total allotted area. Of this practically all belong to Sikhs, who are much the most important members of the agricultural community. His fine physique, thrifty habits, and capacity for patient toil make the Jat Sikh the most desirable of colonists. By no means an intellectual, he nevertheless displays considerable shrewdness in business affairs. Sikhs are themselves keen money lenders and consequently survive in the chronic struggle between *bannia* and *zamindar*, so characteristic of rural India. Their enterprise extends far afield to service in distant lands. At their best Sikhs are possessed of a sturdy independence and a simple honesty, which attracts all who come in contact with them. A boorish and unmannerly exterior is but the cloak to a nature rich in solid virtues. But these fine qualities are often marred by grosser traits, as when their martial spirit and dogged courage exhibit themselves in crimes of violence. What they gain by abstinence from tobacco, they sometimes dissipate through over-indulgence in strong drink. An ill-timed parsimony displays itself in the entertainment of guests, their communal hospitality being generally confined to officials and underlings; yet they will spend upon litigation or family ceremonies with a prodigality, which suggests instability in the presence of good fortune. Jat Sikhs are better as servants than as masters, and their credulity renders them an easy prey to the evil counsels of designing persons.

67. If the private life of the Sikh is not without objectionable features, his character as an agriculturist is above reproach. In extensive cultivation he is unsurpassed: wheat, *toria* and sugar are perhaps the favourite staples. Manuring is not their *forte*, but with the passing of the virgin fertility of the soil this defect is being made good. Sikhs have a keen eye to profit and waste no labour on unremunerative crops. The area under fodder does not as a rule exceed the needs of their plough cattle and these, though of excellent quality, are limited as to numbers by the needs of agriculture. The Jat Sikhs of the Manjha came to the Colony with 13 or 14 years' experience of canal irrigation on the Bari Doab Canal: this placed them at an immediate advantage, which they have since maintained, in the economical

use of water. The Sikhs of Amritsar also introduced their characteristic method of stacking *bhusa* in an elaborate thatched rick. It was an innovation now largely followed by others. Sikhs shine in the management of their domestic affairs, in the erection of handsome and substantial buildings: last, but not least, in their arrangements for transport and attention to the fluctuations of the market, which enable them to dispose of produce advantageously.

68. The Amritsar Sikh is probably the best of the Jats in point of cultivation, though his spendthrift habits and violent disposition detract some-

what from his merits as a colonist. He loves a high wall and gateway to screen him from his neighbours. In physique he is perhaps surpassed by the Ludhiana Jat, bred in the Malwa uplands and second to none. As regards thrift and industry also Ludhiana Jats are superior to their brethren from Amritsar, if less successful in crop production; the villages are not so neat, though they spend freely on buildings, but they are peaceful citizens and effective colonists.

JAT HINDUS.			
<i>District of origin.</i>		<i>Acres allotted.</i>	<i>Percentage of whole Colony.</i>
Amritsar	...	130,412	6.94
Ludhiana	...	77,916	4.15
Jullundur	...	56,729	3.0
Gurdaspur	...	49,992	2.66
Sialkot	...	46,062	2.45
Umbala	...	31,972	1.7
Hoshiarpur	...	18,910	1.0
Lahore	...	12,542	.67
Other	...	20,910	1.1

Their *aladis* have an unusual air of permanence and well-being. The Jullundur Jats taken all round are perhaps the best of the Sikh colonists. The Sikhs of Gurdaspur, Sialkot, Umbala, and Hoshiarpur, though highly esteemed in their own districts, are here slightly inferior to their co-religionists from Amritsar, Ludhiana and Jullundur. But they have all the best Sikh characteristics—industry, activity, frugality—and are often hardly distinguishable from the more successful members of their community. Lahore Sikhs are disappointing—quarrelsome, litigious and violent, without being in the forefront as agriculturists. Minor contributions to the Sikh contingent come from Ferozepore, Karnal, Rawalpindi, Gujrat, the Phulkian States, Kangra and Rohtak.

69. In the foregoing remarks on Sikh character and performance, no very sharp line of demarcation has been drawn between Sikhs and Hindus. In

reality the most orthodox of Sikhs maintain a very distinct separatist attitude, though caste prejudices still survive to show how practice can override precept. The impress of Hinduism remains in the ritual of the Golden Temple, in the presence of Brahmans at births, marriages and deaths, in the popularity of Hindu sacred places, in the refusal of old fashioned Sikhs to mingle with their co-religionists of lower social status—Mazhbis, Ramdasias, Rehtias and Ramgarhias. But the latterday revivalists are rather less catholic, for one of the most important items in the separatist programme has been the elimination of Hindu influence from Sikhism. A different motive lies at the root of another significant aspect of Sikh activity. Other proselytizing religions and the Arya Samaj have reclaimed many of the low class Sikhs, who found themselves excluded from social equality with the leaders of their own religion. A levelling-up of class distinctions has consequently resulted among Sikhs: at Lyallpur Mazhbis and Jats have begun to dine together: well-connected Sikhs frequently contract marriages with women of inferior position; and low caste brethren have been formally received into the Sikh fold. A movement towards temperance has also asserted itself, for drunkenness has long been recognized as the besetting vice of Sikhs and illicit distillation is rife in every Sikh *ilaga*: in such circumstances the foundation of a temperance society at Lyallpur cannot be otherwise than beneficial. These indications, like the recent impulse

towards education, show the Sikhs of the Colony to be a progressive and united body, willing and ready to remove abuses from their midst and earn distinction for the community.

70. The Musalman Jats are next to their Sikh and Hindu brethren

Jat Musalmans, 12·31 per cent.

as regards the extent of their holding in the Colony. But beyond the racial connection Hindu and Musalman Jats have little in common. The martial ardour and adventurous instinct of the Sikhs is singularly absent. These are a milder people, not remarkable for intelligence or capacity and constitutionally ill-equipped for a struggle against adversity and hardship. Frequenting as a rule in the old home the damp and enervating river lowlands, where cultivation required little labour but offered uncertain returns, they lack both the mainsprings of Sikh activity—physical fitness and the commercial instinct. Their presence in such numbers is due rather to congestion in the parent districts than a natural aptitude for pioneer work in uncongenial surroundings. In private life they are extravagant and thriftless, but display no inclination for sport or gaiety. As agriculturists they share the Sikh partiality for extensive cultivation, especially of cereals and sugarcane, though distinctly inferior in the quality of their husbandry. Indolence and indifference to domestic economy must always impair their success as colonists. However they produce very fair results and there are some notable exceptions to this general disparagement of their agricultural achievement. Jat Musalmans are a prolific stock, and their women help them in the field, though this is not the custom with every section of the community.

71. The largest allotment is held by the Jat Musalmans of Sialkot.

Jat Musalmans—origin by districts.

JAT MUSALMANS.				As elsewhere observed, they are not particularly devoted to the Colony and the attraction of the old home, facilitated by easy railway communication, is very strong with them. The Sialkotis are typical Musalman Jats; though much more prosperous here than in the district of their origin, there is more debt amongst them than usually prevails in the Colony. The Gurdaspur Jats have the same characteristics as their brethren from Sialkot and cannot be very highly rated either. The Hoshiarpur and Amritsar contingents are, however, markedly superior. The Amritsar Jat is a peaceful, law-abiding citizen, equal to the Sikhs of his district as a cultivator, particularly in the pro-
<i>District of origin.</i>		<i>Acres allotted.</i>	<i>Percentage of whole Colony.</i>	
Sialkot	...	78,074	416	
Gurda-pur	...	55,307	296	
Hoshiarpur	...	35,596	19	
Amritsar	...	25,946	14	
Gujrat	...	8,538	44	
Other	...	26,674	145	

duction of sugar. Those from Hoshiarpur are a manly and industrious peasantry, much above the Jat Musalman standard as regards physique: they have done excellently in the dry, inhospitable regions towards Jhang and Shorkot. Most of the remainder come from Gujrat, Umbala, Lahore, Ludhiana, Multan, Jullundur or Ferozepore and require no special notice; except for the Multanis, they present little variation from the characteristic type. The Multan Jats are rather different, robust and hardy like other western Punjab *zamindars*, with a strong preference for fodder crops, though lacking the agricultural skill of the rest.

72. The Arains are next to the Jats in importance. This mixed race of

Arains, 10·7 per cent.

professional gardeners are all Musalmans by religion. In appearance small and wiry, they fail perhaps at first sight to convey too favourable an impression, yet as colonists the Arains are second only to the Jat Sikhs. Submissive, hardworking and frugal, addicted neither to crime nor extravagance, they are model members of an agricultural community. In the old districts Arains are somewhat belittled as unambitious and easily cowed by difficulties. Their character in the Chenab Colony wholly belies this imputation. True, they do not count for much in local politics and produce few men

of mark : but they have addressed themselves to the most arduous labours, in regions remote and unpromising, with remarkable success, and survive the vagaries of a very trying climate in a manner which reflects the greatest credit on their physical powers. Arains are of all tribes the most philo-progenitive : in this connection their services to a nascent Colony, which needed above all an abundant agricultural population, can hardly be overrated. Not less meritorious was the part they played in wresting from complete abandonment many tracts, notably at the tail of the Jhang and Gugera branches, which other immigrants had discarded as valueless. Arboriculture is popular with them, and an ample growth of trees generally characterizes their *abadis*, which, while they lack the imposing façades affected by the Sikhs, are well established and flourishing settlements, often provided with fine mosques and guest-houses. They are a progressive body, keen in the cause of education, and anxious for wider recognition as an element of strength and substance in the body politic.

73. Arains are not large landowners in the parent districts and their holdings are generally minutely subdivided : there is some truth in the allegation that they are unequal to the management of large estates, especially as they prefer to cultivate in person and resent the importation of outside labour. Signs of this tribal characteristic are not wanting here and there in the Colony, where grants are naturally much larger than the average holdings in the old home : however, generosity to landless dependants and a rapid increase in the Arain population has usually ensured the development of their *manzas* to the fullest extent—indeed many of the Arain villages are already congested. But though the Arains have an established reputation for competence and industry in the administration of their Colony holdings, they are even more highly esteemed as tenants. They take service with every class of landlord, and not a landlord but is glad to have them. The current proverb about them, *mal gaen te raiyat rain* (" cows are best cattle and Arains best of tenants ") is a just and well-merited compliment. Their preference for *intensive* culture survives, partly as a relic of their hereditary vocation and partly as a result of the minute sub-division of holdings already referred to. They are untiring in the application of manure and well versed in the economical use of water. Vegetables, potatoes especially, spices, tobacco and other valuable crops always claim a large share of their attention. No tribe employs its women in field work more assiduously than the Arains, and very useful they are.

74. Hoshiarpur Arains have the largest holding in the Colony, closely followed by their Jullundur brethren. The Arains of Jullundur are the *élite* of their tribe—peaceable, industrious and unsurpassed in the quality of their cultivation. Those of Hoshiarpur and Ludhiana are hardly less desirable as colonists. Gurdaspur and Sialkot sent fairly large contingents, but these are less skilful exponents of the Arain tradition. The representatives of Lahore and Amritsar are present in smaller numbers, though they can compete in efficiency with most of the others. There are also Arains from Umbala, Multan and Gujrat—neither in quantity nor quality comparable to the best of their caste-fellows, but not far behind the Arains of Sialkot and Gurdaspur.

District of origin.	ARAINS.		
		<i>Acres allotted.</i>	<i>Percentage of whole Colony.</i>
Hoshiarpur	...	51,879	2.76
Jullundur	...	50,095	2.7
Gurdaspur	...	32,175	1.7
Ludhiana	...	28,314	1.5
Sialkot	...	17,675	.94
Lahore	...	10,884	.57
Other	...	10,140	.53

75. Immigrant Rajputs occupy altogether 3.27 per cent. of the Colony, of which area .52 is held by Hindu Rajputs and the rest by Musalmans. The Rajputs are much less homogeneous than the castes described hitherto :

nearly every Punjab district contributes its quota. The bulk of them are

RAJPUTS.			
<i>District of origin.</i>		<i>Acres allotted.</i>	<i>Percentage of whole Colony.</i>
Umbala	...	10,627	56
Hoshiarpur	...	7,030	38
Sialkot	...	6,916	37
Jhelum	...	6,231	33
Multan	...	6,203	33
Shahpur	...	5,679	3
Gujrat	...	2,728	15
Jullundur	...	2,646	14
Others	...	13,807	71

Umbala, Hoshiarpur and Sialkot sent small bodies of Rajput peasant grantees. As regards agricultural pursuits Rajputs are greatly handicapped by pride of race. In the old districts they are usually large owners, but everywhere there is complaint of careless and unsystematic cultivation. The Umbala Rajputs are among the least desirable of colonists. Their women observe the strictest *purdah* and afford no assistance in the field. The result is larger payments to the village servants, especially the water-carrier and sweeper. Umbala Rajputs are chronic absentees and seldom cultivate in person; laziness, extravagance and inefficiency stand in the way of their success as practical farmers. The Rajput peasants from Sialkot and Hoshiarpur largely share the traits of their Umbala brethren, but in a lesser degree: the Hoshiarpuris are the best, because they interest themselves directly in their holdings and do not leave everything to tenants. Minor contingents of Rajputs came from Rawalpindi, Gurdaspur, Amritsar, Ludhiana, Rohtak, Hissar, Peshawar and Ferozepore.

76. The Kambohs are practically all from Amritsar or Jullundur, and

Kambohs, 3.01 per cent.

other districts are negligible. Kambohs are mostly of the Sikh persuasion, and those who have forsworn their Hindu origin and embraced Islam lack the

KAMBOHS.			
<i>District of origin.</i>		<i>Acres allotted.</i>	<i>Percentage of whole Colony.</i>
Amritsar	...	42,605	2.25
Jullundur	...	9,683	.53
Others	...	4,443	.23

energy of the Sikhs. As a general rule it may be said that, while Muhammadan Kambohs approximate to Arains, the Sikhs share the characteristics of their Jat brethren. The appearance of the whole tribe, however, betokens inferior breeding, Kambohs being short, thickset and coarse-featured. Their lower status is further reflected in the contempt of the Jat Sikhs, for the two tribes never intermarry. In private life quiet and docile, the Kambohs have made excellent settlers and their community might with advantage have received a larger allotment in the Colony. Their rise to the position of landowner in the old districts is probably of comparatively recent date and it is as tenants that they are chiefly distinguished. As regards general capacity apart from agriculture they fall below the Jat Sikhs, and candidates for local honours from among their ranks are few and far between. But as cultivators they stand in the forefront of their profession, careful alike of their land and their cattle, unsparing of personal effort, and on the whole superior even to the Jat Sikhs. In their partiality for vegetables, melons and other high class crops, they resemble the Arains; likewise in arboriculture, which has a considerable vogue with them. Potatoes and roses are a speciality with the Kambohs: as regards potatoes they now have many imitators, but no one has as yet followed them in the culture of the rose for commercial purposes.

77. The Pathan element in the Colony is of no great importance.

Pathans, 1.43 per cent.

They are mostly pensioner or *nazarana* grantees from Jullundur, Peshawar, Dera Ismail Khan, Ferozepore, Bannu, Ludhiana and Gurdaspur. Two dis-

tricts, Lahore and Amritsar, contributed peasant contingents. The Lahore Pathans were Qazlbashes, extravagant and quarrelsome, inferior cultivators and inclined to leave everything to tenants. Their villages are well established, though the Qazlbashes do not reside personally to any considerable extent. The Mianwali grantees are of a less characteristic Pathan type than the Qazlbashes and as colonists even more unsatisfactory. Many confiscations were necessary before they could be induced to settle, and now that they are obtaining proprietary rights their tendency is to settle up and disappear. The Mianwali Pathans are careless cultivators and somewhat criminally disposed: their *abadis* are not in any way conspicuous.

78. The Gujars are all Musalmans from Gurdaspur, Gujrat or Hoshiarpur. In the Colony they have discarded the pastoral tradition, for which they are distinguished elsewhere, and appear as ordinary cultivators. They are peaceable folk, not too industrious and somewhat hampered by debt. In the old districts Gujars generally occupy low-lying riverain lands, and their lack of energy is perhaps due to long residence in unhealthy surroundings. The Gujars here have been among the most persistent of absentees. But there has been some improvement of late and they can now show very tolerable *abadis*; like Arains, they are a prolific tribe. The Hoshiarpuris are distinctly the best, being reputed skilful in sugar refining. The Gujars of Gurdaspur come second, and those of Gujrat last of all. Save for the Hoshiarpuris, the Gujars cannot be accorded a very high place among the landed colony population.

79. The Sainis are all Sikh or Hindu, principally the former. They hail mostly from Hoshiarpur: Umbala and Jullundur are also represented. These are the only districts, which furnished contingents of Sainis. They are said to be connected racially with the Arains and their name is popularly supposed to be a derivative of *rasai* ("cleverness"). As cultivators they resemble Arains in their partiality for market gardening, but this is in addition to ordinary farming, for Sainis are people of some social standing in the old homes and intensive cultivation is with them not so much a profession as a hobby. Their industry, skill and thrift are proverbial: in the Colony they have an excellent reputation, though their holding is inconsiderable and they are not conspicuous in public affairs.

80. Christians received 11,522 acres: a portion of this area is held by European reward grantees and capitalists, while the Roman Catholic Mission at Maryamabad were auction purchasers of 645 acres. The rest is allotted to peasant converts of various denominations in six *mauzas*, over the fortunes of which their respective ministers of religion preside. These Christians were originally Chuhars for the most part with little or no previous experience of agriculture: what progress has been made is due to the inspiration of their leaders.

81. The principal Hindu grantees not previously noticed are Labanas, Brahmans, Khattris, Ahluwalias or Bannias from various districts. These are mainly of the *nazarana* or pensioner classes. The Labanas are peasants

PATHANS.

District of origin.		Acres allotted.	Percentage of whole Colony.
Mianwali	...	7,206	38
Lahore	...	4,970	27
Other	...	14,574	78

GUJARS.

District of origin.		Acres allotted.	Percentage of whole Colony.
Gurdaspur	...	14,878	79
Gujrat	...	3,772	22
Hoshiarpur	...	3,365	21

SAINIS.

District of origin.		Acres allotted.	Percentage of whole Colony.
Hoshiarpur	...	9,985	5
Umbala	...	3,935	21
Jullundur	...	2,916	16

Christians, 61 per cent.

Miscellaneous Hindus, 4.3 per cent.

of the Sikh persuasion from Gujrat, Lahore, Jullundur and Hoshiarpur, originally riverain dwellers with no great aptitude for agriculture. In the Colony they have proved their capacity for husbandry and can now compare favourably with the lower ranks of Jat Sikhs. Petty grants to Nais, Jhinwars, Tarkhans, Chimbans and Namanbansis are also recorded.

82. The remaining Musalmans are almost as motley a company.

Miscellaneous Musalmans, 2·51 per cent.

They include Sayyads, Awans, Qureshis, Moghuls, and Balochis. These tribes all hold substantial areas. The Awans (7,318 acres) are mostly Mianwali peasant grantees in character akin to the Pathans of that district, that is to say they are slovenly cultivators of quarrelsome disposition, who have as yet shown no sign of developing into useful colonists. The Sayyads (9,334 acres) hail chiefly from Multan and like the Qureshis, Moghuls and Balochis belong to the yeoman or capitalist classes. Faqirs, Mirasis, Telis, Chimbans, Nais, Sheikhs, Tarkhans, Jhinwars and Ghakkars complete the list of Musalman grantees.

83. No less than 14,841 acres, or 7 per cent. of the total allotment,

Departmental allotments, 7 per cent.

is held by Government departments, Municipalities, District Boards, and cavalry regiments, exclusive of roads, railways and areas covered by waterways and plantations belonging to the Irrigation authorities. Five whole *manzas* and part of a sixth are utilized as stud farms by Cavalry regiments. The Agricultural department's holding at Lyallpur is also considerable, and scattered areas are allotted to the Army Remount department for stallion stables or fodder supply. The fair ground at Lyallpur is the most extensive of the District Board allotments. The other items are of slight importance.

Distribution of land : (ii) Indigenous—35·4 per cent. of whole Colony.

Hithari.			Nomad (all Musalman.)		
Religion.	Caste.	Per-centage.	Tribo.	Sub-division.	Per-centage.
Hindu	Jat Sikh	1·6	Jat and Raj-put (Jangli).	Kharral	3·0
	Arora	78		Wattu	95
	Mazhbi	63		Chaddhar	85
	Others	8		Bhatti	80
Musalman	Rajput	3·54	Baloch	Khichi	59
	Jat	1·76		Othors	12·65
	Sayyad, Qureshi	2·06		Jatoi	1·93
	Others	54		Others	3·32

84. Jat Sikhs, Aroras and Mazhbis are the chief representatives of the indigenous Hindu land-owning communities: they occur in numbers considerable enough to deserve separate notice. Hindu Rajputs, Sainis, Kambohs, Khattris and Brahmans are also found in lesser quantities, and require no more than a passing reference. Throughout the Colony the Khattris are overshadowed by the Aroras, who are a strong and vigorous element in the body politic, as will be seen hereafter.

(i) The Sikh Jats, save for a sprinkling in the vicinity of the Deg nala, all hail from Gujranwala. The Sikhs of the Deg approximate to the Jangli type,

Jat Sikhs, 1·6 per cent.

with whom they have always been closely associated; they are fair cultivators, but much given to theft or the receiving of stolen property and a great anxiety to the police. The Gujranwala Sikhs are very different, an athletic and manly race, surpassing in energy and industry the Muhammadan population of that district. Their cultivation is excellent, and their *abadis* well developed and prosperous. Like other Jat Sikhs they combine a taste for

adventure with love of gain, but though they make a profession of theft and illicit distillation, crimes of violence are rare amongst them. Virks and Waraichs are the principal indigenous Sikh tribes.

(ii) The Aroras, otherwise known as Kirars, were from the Jhang and Montgomery districts. They received grants on peasant, yeoman, capitalist and even camel service terms: an enterprising and industrious tribe, noted for capacity in a variety of pursuits—trade, money-lending, service and agriculture. Efficient, if somewhat ruthless, landlords, they are no mean performers even in the actual labour of the field. Arora tenants along the Ravi have a special partiality for well cultivation and prefer superior staples. Their proprietary connections in the old villages date in some cases from Sikh times and have been since improved by sale and mortgage. *Dharwais* (weighmen) are generally of Arora caste.

(iii) The Mazhbis are established in 4 *mauzas* and formerly belonged to the Gujranwala district. Most of them are pensioners from the 23rd, 32nd and 34th Pioneer and other regiments. The Mazhbis have not been very successful colonists. Their lowly origin shows itself in the untidy, ill-kept *abadis*: cultivation is slovenly and unskilled; and the community is depressed economically by debt, extravagance and a passion for litigation.

85. The separation of the Hithari Musalman population into its component elements is no easy task. Jats and Rajputs are hopelessly intermingled, for it is the ambition of every aboriginal Jat to pass for a Rajput. All that can be attempted is to distinguish the chief land-owning Jats and Rajputs and add some remarks on the Sayyads and Qureshis, who occupy a considerable area. Miscellaneous allotments include grants to Pathans, Arains, Kambohs, Awans, Moghuls, Sheikhs, Qazis and Faqirs, but the areas are so small as to require no further notice.

(i) The principal Rajput sub-divisions are Sial, Chaddhar, Bhatti, Kharal, Khokhar and Wattu. In importance and the extent of their allotments the Sials lead; these alone rank exclusively as Hitharis. The other five tribes are chiefly nomads and will be described as such. The Sials are of fine physique and belong almost entirely to the Jhang district: two branches, however, the Taranas and Fattianas, established themselves on the Ravi, where they still reside. The principal Sial clans are Rajbana, Bharwana, Kamiana and Mahni.

(ii) Among the Jat tribes, which received grants as Hitharis, the following may be specially distinguished: Kathia, Chunia, Chatha, Harral, Khichi, Sipra. The Chunias and Chathas are Gujranwala Jats of considerable agricultural skill, as compared with ordinary indigenous standards. Chunias are industrious without being given to extravagance, a rare combination. Khichis and Kathias are important Ravi tribes, but, like the Harrals and Sipras, they fall mainly into the category of nomads.

(iii) The Sayyads belong mostly to the Jhang and Chiniot tahsils; they are treated with a certain reverence and live in considerable state, whereby their fortunes have become somewhat embarrassed: the Qureshis occupy a similar position in the Shorkot tahsil. There are also settlements along the Ravi. The tribal characteristics are reproduced in their colony holdings. Subsisting largely on doles from their religious adherents and affecting an odour of sanctity, they are of no great usefulness in the capacity of colony landlords. Little personal interest is taken in agriculture, and *khudkasht* is practically unknown.

86. The success of the nomad allotments is a striking instance of the triumph of environment over heredity.

Jangli characteristics.

The indigenous tribes formerly took pride in their unsettled state and turbulent demeanour, holding all peaceful pursuits in unaffected contempt. The breeding of horses and cattle was their favourite, in fact their sole, occupation and agriculture was abandoned to dependants of inferior caste. Theft they regarded as a manly accomplishment and a recognized means of replenishing the flocks and herds, by which they lived. A handsome and hardy race, they were capable of great feats of courage and endurance. With such a past their reclamation is an administrative achievement of the first magnitude. It is possible to make too much of their merits as colonists. They are still prone to cattle theft and burglary, being on this account much disliked by their neighbours. They still devote excessive attention to cattle—indeed, their profits from the sale of *ghi*, hides, wool and live-stock must be very large—while they lag far behind immigrants of every class in their knowledge of agriculture. They are careless irrigators and as yet strangers to any but the most elementary forms of husbandry. Jangli cropping may be classified somewhat as follows: large areas under wheat, *jowar*, *chari*, turnips and miscellaneous fodder crops, little or no sugar, moderate *toria* and gram and a good output of cotton. It is unfortunate that the presence of aliens as permanent residents in their midst is resented: probably only 10 per cent. of their tenants are other than nomad by origin. In consequence, the admirable traditions of mid-Punjab agriculture, now so firmly rooted all over the colony, find tardy admission to their exclusive circles. But in some other respects they have the advantage of the immigrants: their closely settled *abadis* teem with an abundant population: their hospitality is unbounded and indiscriminate: they are free from the money-getting propensity, which mars the character, if it aids the material prosperity, of some immigrant castes. Their settlements are marked by neatness, simplicity and a primitive style of architecture, curiously reminiscent of their former wanderings. The residential portion is in the form of a thatched roof, supported by beams of rustic timber, a reproduction of the *pakhi* or *karha* of the nomad era. A substantial building is often appended, but for the accommodation of the domestic *lares* and *penates*, not the members of the family. Cattle are relegated to paddocks on the cultivated lands, away from the actual *abadi*, a sensible custom which immigrants also would do well to follow.

87. The Kharrals are the leading nomad tribe of the "great Ravi", a term by which certain castes sought to distinguish themselves from the inferior and purely agricultural classes residing within their limits, to whom the contemptuous title of *nikki Ravi* was applied.

Kharrals, 3 per cent.

The Kharrals overran the Ravi country as far as Kamalia, where the important Lakhera clan is still located. Further up the Ravi, in the vicinity of Jhamra, Danabad and Lundianwala, the Upera Kharrals held sway. The Lakhera Kharrals took to agriculture at an early stage: not so the Uperas, who penetrated far into the Bar and made it their permanent home. Cultivation in the riverain lands was left to dependants, while they busied themselves in the breeding and theft of cattle, the pursuit of tribal feuds or the assertion of their sway over lesser folk. They were thus mainly classed as nomad graziers when the colony lands came to be allotted. The Kharrals are typical Janglis with fine physique and well-marked features, which suggest their Rajput origin. Their leading men are a bulwark to the administration and the rank and file, if not yet weaned from predatory ways, are among the most successful of Jangli colonists.

88. The Wattus (Rajput) received much less land than the Kharrals: otherwise the two tribes have much in common. But the Wattu tract about

Wattu, 95 per cent.

Gugera included little jungle and the tribe took kindly to husbandry. Their peaceful appearance and fair agricultural skill contrast strangely with a stormy history. The Wattus are polite and hospitable, still immoderately fond of cattle, but comparatively unimportant in the Colony.

89. The Chaddhars are Rajputs of Jhang, who probably came originally in the wake of the Sials. Their Colony grants did much to revive a tribe, which had to some extent fallen on evil days at home. The Chaddhars have a very substantial holding both as nomads and Hitharis. Jappa, Rajoke, Sajjanke and Kangar are their principal sub-divisions. By comparison with their more prodigal neighbours, Chaddhars are among the most estimable of the Jhang nomad Rajputs.

90. The Bhattis are pure Rajputs, having their homes in Chiniot, Khangah Dogran and Hafizabad tahsils. In former days they contended with the Virks and Kharrals for the supremacy of the eastern Bar. They are now very fair cultivators for the most part free from predatory habits, tractable and simple, if somewhat lacking in energy. But this is not true of the Bhagsinke branch, who are more typically nomad in their characteristics. Connections by marriage with the Bhattis are much valued by other tribes. The tribe has generally kept free from debt and depression, and the leading Bhattis are now substantial persons.

91. The Khichis were associated in pre-colony days with the Kharrals, though not on equal terms. Their claim to a Rajput origin is probably unfounded. Their colony holding is considerable, but the Khichis are essentially of the "little Ravi," a persevering, industrious agricultural tribe with little ambition and no great social standing.

92. The rest may be briefly dismissed. Wasirs (54 per cent.) were originally subordinate to the Waghas, but hold a number of villages jointly with them: both are small nomad tribes, who grazed in the Bar under the protection of the Kharrals. Sipras (47 per cent.) were Jat dependants of the Sials. The Harrals (46 per cent.), said to be Ahirs, settled by the Chenab in the Chiniot tahsil, whence they made inroads into the Bar. The Harrals were famous graziers and cattle thieves, but poor cultivators. Khokhars (38 per cent.) claim, apparently with truth, a Rajput descent; in Jhang they were reputed hard-working and thrifty. Khaggas (35 per cent.) are a semi-religious tribe of the Ravi with no special merits as agriculturists. Still smaller were the allotments made to a number of unimportant Jangli clans, who remain to be noticed. The Kathias, like the Khokhars, claim to be Rajputs and share the characteristics of the Kharrals: the Kathias are a "great Ravi" tribe, but of little consequence in the Colony, their allotment being insignificant. The Mujawars were the hereditary guardians of the shrine at Shahkot and lived on the offerings of pilgrims: they received grants of land by virtue of their office, but hardly justify their selection, since they are constantly absent from their holdings for the purpose of *pirimuridi* and take little interest in agriculture. Nauls are Jhang Jats of swarthy appearance and uncouth speech: the Nauls boast a history of some antiquity, but are now chiefly distinguished for their defiance of law and order. The Tarars are a Gujranwala tribe, who have fallen from a high estate through extravagance and domestic discord; likewise the Hanjras, oldest of the Gujranwala tribes, now forlorn and scattered, though once rich and prosperous. The Joiyas were notorious thieves, but inferior to the great Ravi tribes in courage and enterprise, and of smaller stature. For the remainder mere enumeration will suffice: Bar, Kalera, Sanbal, Wasli, Lak, Wains, Bhojia, Kamoka, Dullo, Mona, Gujar, Nun, Gadgor, Dhariwal, Saidhan, Mutmal, Maral, Sidhu, Dhap, Lota, Dhamraya, Lail, Samur, Kodhan, Saggal, Ahir, Jota, Aura, Laddika, Jagga, Uthwal, Wainiwal, Dhamoka, Bural, Khitran, Dauhar, Aulakh. Many of the Jangli *kamins* received allotments of land and are not to be distinguished, as regards appearance, from the ordinary nomad grantee, though the latter are inclined to lord it over them and dislike their proximity on equal terms. Musallis, Mochis, Tarkans, Paolis, and Kumbars are among the *kamins* so honoured.

93. It was not at first intended to allot to the camel-owning Balochis grants of land in the colony on the scale eventually sanctioned. They were very bad cultivators, the dregs of the nomad population, and the idea was that they should continue to combine their hereditary vocation with the business of agriculture, maintaining their camels in uncolonized areas and employing them for profit in the transport of merchandize. They would normally have received very small allotments or none at all. That was the course adopted on the Jhang and Rakh Branches, where some Bhuttas and Turs received allotments as nomads. But the introduction of the service scheme changed all this. It was realized that the provision of *sarwans* to accompany the camels, up-keep of gear, production of animals for inspection and training, would strain the resources and curtail the profits of camel-owners participating in the scheme. Consequently the Balochis received, on service terms, larger allotments than those to which they would have been entitled as Bar nomads, and their present state is envied even by the Janglis, who affect to belittle them. The characteristics of Janglis and Balochis as cultivators do not differ materially. But the Balochis generally give their land to tenants, especially to Arains, and seldom cultivate in person. They are extravagant like the Janglis, but after a more sordid fashion; a hardy race, but combining physical capacity with indolence in practical affairs: and they lack even the limited intelligence of the Jangli. Most of the Balochis live along the Ravi: the four principal tribes are Jatoi (1·93 per cent.), Korai (·48 per cent.), Rind (·47 per cent.), Kaliar (·32 per cent.). Smaller contingents were provided by the Karnana, Marth, Tur, Yaqmana, Gadhi, Pasoi, Lishari, Bhutta, Galoi, Veh and Mardana clans. Between these different elements it would be superfluous to discriminate further.

CHAPTER IV.—Agricultural conditions.

A.—MARKETS AND COMMUNICATIONS.

Railways.

94. The following lines of railway traverse the Colony area:—

- (1) The *Wazirabad-Khanewal* line, for 104 miles, between Sukheke and Shorkot Road.
- (2) The *Chichoki-Shorkot Road* line, for 105 miles, between Nankana and Shorkot Road.
- (3) The *Shahdara-Sangla* line, for 16 miles, between Bahalike and Sangla.
- (4) The *Jech-Doab* line, for 12 miles, between Waryam and Shorkot Road.

95. These lines all afford direct communication with Karachi, and the principal market towns are situated at suitable intervals along them. Traffic is, however, by no means confined to the large centres: a brisk export trade is carried on at many of the less important railway stations, where traders establish themselves during the busy season. The market towns, which serve the colony, are enumerated in the margin. The bulk of the agricultural produce of the tract changes hands at the 8 new colony towns—Lyallpur, Gojra, Chuharkana, Toba Tek Singh, Jhumra, Jaranwala, Tandlianwala and Sangla. All possess the advantage of a central situation, having been designed with a single eye to the public health and convenience. Their phenomenal prosperity is consequently not surprising. But the older towns on the fringe of the colony area also revived in the new era. Chiniot and Jhang retain much of their hereditary custom with Jangli and Hithari grantees along the Chenab riverain:

Markets.

MARKET TOWNS IN OR NEAR THE COLONY AREA.

District.	Town.	Population, 1911.	Factories.
Lyallpur	Lyallpur	19,578	11
	Gojra	5,417	6
	Toba Tek Singh	3,009	4
	Jhumra	2,276	5
	Jaranwala	960	2
	Tandlianwala	581	2
Gujranwala	Nankana	6,131	...
	Chuharkana	3,376	1
	Sangla	3,190	4
	Khangah Dogran	4,848	2
Jhang	Jhang-Maghiana	25,914	1
	Chiniot	14,085	...
Montgomery	Kamalia	8,237	...

Kamalia is now on the railway and does business with villagers in the vicinity, who do not care to go as far as Tandlianwala or Toba Tek Singh: Nankana is developing into a thriving mart under the management of the Mahants of its famous shrine: and Khangah Dogran, the headquarters of a tahsil, is also a place of some mercantile importance. Urban settlements other than the market towns hardly rise above the dignity of large villages. Samundri is important only as the headquarters of the tahsil, to which it gives its name. Shahkot and Dijkot were early foundations, intended to serve as centres of commerce but arrested in their growth by the alignment of the railway, which paved the way for the rise of Lyallpur and Sangla at their expense by leaving them isolated. In the market towns industry is for the most part subservient to the ends of agriculture. Practically all the factories enumerated are for ginning and pressing cotton: there are also two cotton factories at Marh Balochan. Flour mills and oil presses are sometimes worked in conjunction with the cotton factories and sometimes exist separately. They are also occasionally met with in outlying parts: for instance on the Rakh Branch there are some water mills supplied with motive power from the Canal.

96. The Colony is well provided with means of communication other than railways. It is intersected by wide District Board roads, on which improvements are constantly being effected. These are generally feeder roads, converging upon business centres. Metalling is confined to the main

METALLED ROADS IN OR NEAR THE COLONY AREA.

District.	Locality.	Miles metalled.
Lyallpur...	Lyallpur-Narwala	7½
	Lyallpur-Satiana	17
	Lyallpur-Rodukoru	18
	Lyallpur-Jaranwala	4
	Lyallpur-Risalewala	1½
	Jhunnra-Kot Khuda Yar	7
	Jhunnra-Jaranwala	22
	Gojra-Samundri	18
	Gojra-Mungi	2
	Gojra-Jhang	2
Jhang ...	Gojra-Khiwa	2
	Jhang-Toba Tek Singh	2½
Gujranwala	Chiniot-Kot Khuda Yar	8
	Sangla-Shahkot	12
	Sukleke-Chuharkana	22
Total		145½

arteries of traffic. The total mileage metalled is now 145·75. For further details the table in the margin may be consulted. Other important roads follow the lines of railway and principal distributaries: these latter are the property of the Irrigation department, who do not always allow free access to the public. Within village areas every colonist has a road to his own holding: connection between separate *abadis* is similarly established, roads of this description varying in width from 11 to 22 feet. None of the tasks imposed on the Colony officers was more difficult or delicate than the adjustment of claims preferred or resisted in respect of village roads. Prior to the acquisition of proprietary rights, grantees were bound on demand to surrender land from their holdings for roads required in the interests of the community or even of individuals, though they might themselves reap no benefit from the new thoroughfare. The roads almost invariably followed the boundary lines between squares, and rival landowners would exercise the utmost ingenuity, and set in train the most protracted appellate proceedings, to secure the cancellation of an order against them or transfer the burden it imposed to shoulders other than their own. At Settlement, as each circle came to be assessed, the system of village roads obtaining in each *mauza* was examined afresh and all outstanding claims redressed or finally overruled. The principle that every grantee was entitled to a road from the village *abadi* to his holding has been the basis of action throughout, and it may be said with truth that this standard has been everywhere attained. Upon the acquisition of proprietary rights it is of course no longer legal to resume private land for roads by executive order.

Culverts for village roads, where they cross canal watercourses, were erected by the Irrigation department from the proceeds of an acreage rate paid by *zamindars*. It is unfortunate that the cost of upkeep is not similarly leviable, because these culverts easily fall out of repair and *zamindars* take no pains *suo motu* to remedy defects occasioned by accident or decay: the question is one deserving of consideration when the Northern India Canal and Drainage Act is next amended.

97. The chief vehicle of transport is the familiar country cart of the central Punjab. Here it was an innovation, for the Bar nomad knew no means of conveyance except the camel or potter's donkey, and these antiquated methods are still in favour with the mass of Jangli grantees. Carts are of all kinds and sizes, from the fine Ludhiana cart, ribbed and bound with iron, to the common country cart. The rapid increase in their number, indicated by the statistics in the margin, is a very prosperous sign. The metal-ling of the main roads has had an important effect in reducing freights and stimulating cart traffic.

Carts.

Year of enumeration.	STATISTICS OF CARTS.		Number.
1904	21,967
1909	30,737
1914	34,675

Disposal of produce.

- (1) to the peripatetic dealer.
- (2) directly in the *mandi*.
- (3) to the village shop keeper.

98. Produce is usually sold in one of three ways :—

Of these the first is the most profitable. The itinerant *bannia* is usually either the agent of a *mandi* merchant or an independent dealer temporarily stationed at a convenient locality. He purchases as a rule only within a 5-mile radius of his head-quarters and attracts custom by offering full market prices less only the cost of carriage: indeed, he actually presents the *zamin-dar* with a small percentage, known as *haqq dhar*, for grain weighed and sold in the village. Direct sale in the *mandi* is the method adopted by large

DEDUCTIONS IN LYALLPUR MARKET, 1906.

Nature of deduction.	Amount.
<i>Arth</i> (agent's fee) ...	75 per cent. in cash.
<i>Tolai</i> (weighing fee) ...	1½ <i>chittaks</i> per maund.
<i>Pandi</i> (weighing coolie) ...	1 <i>chittak</i> per maund.
<i>Ganesh</i> (charity—Hindu) ...	6 per cent. in cash.
<i>Dulali</i> (sale fees) ...	½ <i>chittak</i> per maund.
<i>Mazdori</i> (unloading grain from carts) ...	½ <i>chittak</i> per maund.
<i>Changar dheri</i> (coolie, who makes the heap) ...	½ <i>chittak</i> per maund.
<i>Rulai</i> (cleaning) ...	Re. 1-4-0 per 100 bags.
<i>Faqir</i> (charity—general) ...	½ <i>chittak</i> per maund.
Fee for emptying and filling bags ...	12 per cent.
Total deductions approximately ...	1.75 %

landowners and Jat Sikhs of the central Punjab outside the peripatetic radius. Muhammadan Jats and Arains do not always care to face the delays and risks attendant on *mandi* transactions, where the weaker party is apt to go to the wall. Mr. de Montmorency examined the deductions obtaining in Lyallpur market and compiled a formidable list of items, amounting in all to 1.75 per cent. The details of this interesting enquiry appear in the margin. There are also carriage expenses, which may be estimated at about nine pies per maund. Janglis and Hitharis often resort to the village shop-keeper—the least advantageous method of the three. This is due to their traditional practice of paying the land revenue through the family dealer, who values the produce at a “harvest rate” and hands over the balance, after deducting the Government demand together with all other outstanding debts. The dealer of course charges full weighing dues, carriage and *mandi* expenses as well as the market price. Even affluent members of Jangli communities are generally driven to local sale by their want of transport and natural incapacity for business.

B.—RAINFALL.

99. The contention that rainfall can be a matter of moment in a tract rendered secure, like the Chenab Colony, by perennial canals partakes of the nature of paradox. Yet such is the case: and it will be a factor of even greater significance, when the Upper Chenab Canal is in working order with all available sources of supply fully employed. Now that the tendency of the Irrigation department is to reduce outlets and economize water, cultivators look to the winter rains to supplement their supplies, particularly when the river is low and the Canal short of its normal volume. In 1912-13 the winter rains were not a day too soon: crops were already withering on the ground, for in spite of the strictest economy the canal failed to complete its

accustomed round of duty. That is an illustration of the rainfall question in a larger aspect. Rain and river are naturally connected; not only the canal, but the river, from which it originates, are the product of rain, and failure in the seasonal supplies may be a double misfortune. In such circumstances crops which rely on the local rainfall, such as wheat and gram, together with the entire *barani* area, a small but expanding quantity, suffer an immediate check in their progress to maturity: while, if the volume of the river be also reduced by shortage of rain at the fountain heads, the diminished supply from the canal itself has to be eked out by recourse to the most rigorous rotational closures. Excessive, and consequently injurious, rains usually occur only during the monsoon season, if occasional hailstorms in spring be excepted. In August of 1908 very heavy rain caused incalculable damage to all the *kharif* crops. But a normal monsoon is as welcome as the winter rains; apart from its effect in arresting the depredations of the bollworm, it stimulates the *kharif* harvest appreciably, especially where command is uncertain.

100. In the statistics themselves two rather important tendencies are worthy of notice. First, the rainfall diminishes as the circle recedes from the submontane region. Here are three readings: Pucca Dulla is in the extreme north-east, Lyallpur in the centre, and Bhagat in the south-west of the Colony:—

Average annual rainfall for the 10 years 1901-02 to 1910-11.

Station.	Summer, April to September.	Winter, October to March.	Total.
	Inches.	Inches.	Inches.
Pucca Dulla	12.67	2.77	15.44
Lyallpur	9.75	2.14	11.89
Bhagat	5.15	1.22	6.37

Secondly, rainfall has apparently increased with the progress of colonization. In the arid wastes, of which the Bar consisted prior to its reclamation, it seldom exceeded 5 inches and in bad years might be *nil*. Irrigation and the growth of trees is responsible for the results set forth below. Mungi and Badwali lie respectively in the south-western and north-eastern portions of the Colony, about 55 miles apart.

Four years' average rainfall between 1897-98 and 1912-13.

Station.	1897-98 to 1900-01.	1901-02 to 1904-05.	1905-06 to 1908-09.	1909-10 to 1912-13.
	Inches.	Inches.	Inches.	Inches.
Mungi	4.57	7.20	12.72	9.35
Badwali	7.51	9.64	16.12	11.87

C.—LIVESTOCK.

Census of cattle.

Year of enumeration.	1901.	1909.	1914.
Bulls and bullocks	239,579	245,623	272,867
Cows	152,499	177,768	171,407
Male buffaloes	44,283	48,678	36,269
Cow buffaloes	124,260	197,117	258,031
Young stock, all kinds.	232,419	270,082	275,376

101. The original Bar had many of the qualities of an ideal breeding

Cattle breeds and breeding.

ground for cattle—a climate hot but dry, a sandy soil with the essential quantity of lime necessary to bone formation, a rainfall scanty but sufficient on occasion to produce grass in abundance, vast expanses of open country for exercise and recuperation. And the Jangli aborigines, backward in all else, were fully alive to the fact. Subsisting largely on milk or its products, constantly augmenting their stock by theft from the riverain villages, these professional herdsmen made a handsome livelihood by the sale of *ghi*, skins and bones. But the spread of canal cultivation and consequent contraction of grazing grounds changed all this: conditions presently became the very reverse of ideal. The increase of moisture vitiated the climate. There were plots of reserved grazing ground (*charagah*) and their importance cannot be overrated, but they usually comprise the worst soil and are seldom extensive. Cattle driven daily along dusty lanes to these barren wastes could hardly fail to deteriorate, and the stall-fed animals reared under such conditions were both difficult to breed and extravagant in the upkeep. That numbers are maintained in spite of these unfavourable climatic influences, which must ever militate against the success of the Colony as a breeding centre, is due to other contributory causes, the abundance of fodder, the alertness of the population—ever anxious to discover fresh sources of gain, the staunch adherence of the Janglis to their pastoral traditions, above all the enormous demand for agricultural purposes. Among breeds the local Montgomery type naturally takes the first place: this is a famous milker, but not otherwise comparable to the best Punjab breeds. For canal irrigation subjects plough cattle to a very severe strain: there is at the same time no section of the agricultural community that does not pride itself upon the quality of its draught animals. The local breeds could never supply the needs of the situation, even if their numbers had been sufficient. The additions made were chiefly of mixed breeds (*desi*)—anything not readily classified is called *desi*—with a sprinkling of Hissari and Dhanni cattle. The Hissari bullock is a powerful animal, almost invariably grey in colour and a very willing worker at the plough. The Dhanni breed is smaller than the Hissari but compact and active, and Dhanni cattle vary as to colour, parti-coloured or black and white coats predominating. Epidemic diseases—rinderpest, hæmorrhagic septicæmia, blackquarter, foot and mouth—occasionally decimate the herds. All these, except foot and mouth, cause heavy mortality, when they occur, though preventive inoculation by the Civil Veterinary department, who receive prompt reports of outbreak from *patwaris*, is having a good effect. The department is also responsible for the supply of bulls through the District Boards and the dissemination, by means of lectures, of much useful advice to breeders.

102. That the demand for plough cattle is met to a certain extent by

Import and export of cattle.

local breeding is clear from the figures for young stock—the census of 1909 showed young stock to be more numerous in Lyallpur than in any other Punjab district. However, the limitations of local breeds and breeding conditions in the beginning left the colonists no option but to import. In most cases they renewed their stock in the old home. Before long itinerant dealers discovered in the Chenab Colony a fruitful field for enterprise, which they exploited to the full. These dealers were mostly Aroras of the western Punjab and the cattle they brought were of the finest types from the famous breeding grounds in the south and north of the Province. Tenants and menials found it cheaper to do business with wandering tribes of low caste, such as Changars, Meos and Odhs, who hawked about inferior cattle. A vast import trade has sprung up in this way, though, curiously enough, export is also considerable.

CATTLE AT THE LYALLPUR FAIR.

Detail.	1905.	1914.
Cows ...	2,698	3,337
Bullocks ...	3,836	7,036
Buffaloes ...	3,660	5,457

The District Board of Lyallpur is an energetic body and they have contrived to make their annual fair one of the most successful shows in the Punjab. Some details of the number of cattle which change hands are supplied in the margin. But these are seldom full-grown animals in prime condition. There is old stock in plenty, usually

purchased by butchers for consumption by the Musalmans of the north-west, or for agricultural purposes by less affluent *zamindars* from the western Punjab. The young stock is, however, of good quality and commands a ready sale among colonists and cultivators of neighbouring districts.

103. The production of *ghi* has been described as the principal home industry of the Province, and the profits therefrom, though an elusive quantity hard to estimate with accuracy, must be very great. The Lyallpur district now holds an important place among the principal *ghi*-producing tracts of the Province. The trade is in the hands of Kirars, who collect their supply from *zamindars* in the villages. With Janglis it was always a popular source of gain: in the old days Lahore city was largely supplied with *ghi* from the Bar. Milch cows of the valuable Montgomery breed then provided the bulk of what was required. But in the era of colonization this fine strain fell upon evil days. Its decline coincided with the rise of the buffalo in the public favour. The buffalo gives far more milk, so with abundance of green fodder available from their colony holdings Janglis, and to a lesser extent immigrant colonists, found the breeding of these animals a novel and profitable venture. It was inevitable, too, that buffaloes should increase *pari passu* with the spread of cultivation: if not equal to the class of animal formerly bred on the river *belas*, where larger grazing-grounds and greater varieties of food were available, the stall-fed buffalo at any rate thrives better than the cow. The Kundi breed is best. This is a buffalo of medium size with a fine skin and short horns, curling inwards. The Ravi animal is coarser and altogether inferior to the Kundi type, though much favoured in the Colony. But the modern popularity of the buffalo is not alone responsible for the decline of the Montgomery breed. The large Gujar communities, which infest the colony towns as they do most others in the Province, have long made a practice of buying up the best milkers. And this type of Gujar, if an expert in milk production, is a foe to the best interests of his trade, because he takes the last ounce of milk and sacrifices the progeny of his herd with the most complete disregard to the survival of a high class strain.

104. A very remarkable increase will be observed in the number of sheep and goats. Higher class *zamindars* consider it rather beneath their dignity to own these animals, which are usually kept by menials or wandering tribes. The statistics reflect the substantial position these communities have made for themselves. The cost of feeding is practically *nil*, because the sheep graze on the fallows and the goats on jungle scrub. Herdsmen sometimes receive Re. 1 per acre for herding sheep on plots to be sown with sugarcane and cotton: goats are also valued for their manure, but to a lesser extent than sheep because they do more damage. The following breeds of sheep are met with: Bikaniri, Bagri, Lohi, Buti, Koli. They are valued for their wool and skin, as well as meat and milk. The wool is used locally for clothing and there is also a fair export trade—Multan is an important market for the best fleeces. Goats are not distinguishable by breeds. The hair of goats is largely used for ropes, sacks and mats, the skin for water bags. Both sheep and goats are largely maintained for consumption, and the butchers often have a considerable interest in the ownership of the herds.

SHEEP AND GOATS.

Year of enumeration.			Sheep.	Goats.
1904	...	...	128,716	116,089
1909	...	...	246,156	107,258
1914	...	...	238,546	152,312

105. The increase in the number of camels belies the legend diligently circulated by camel grantees that canal-irrigated tracts are unfavourable to this class of stock. They have some vogue for riding purposes, still more as

beasts of burden, and form the worldly wealth of the numerous vagrant bands

CAMELS.			
Year of enumeration.			Number.
1904	...	...	14,569
1909	...	...	17,777
1914	...	...	25,131

of Bagris and Bikaniris, who visit the colony in search of employment. With its dry climate the Bar was formerly one of the best breeding grounds for camels, which fed on the indigenous shrubs—*wan*, *jhand*, *phog*, and *lana*. As a pack animal the Bar camel had a reputation second to none. But the advent of canal irrigation was a critical moment for those who lived by camel breeding. The Bar camel became unhealthy and infertile. Grazing grounds vanished and the ravages of *surra* reduced the herds. The wisdom of locating four camel service corps in the colony has been hotly debated. However, the discovery of a cure for *surra* largely changed the aspect of affairs. Camel grantees are encouraged to take their animals far afield to surroundings more congenial than the colony affords: the colony camel has at the same time taken kindly to green fodder and now readily devours *toria*, *taramira*, turnips, gram, *massar*, *moth*, *rawan*, *gawara* and *bhusa*. The abundance of fodder probably accounts for its survival in such numbers under apparently adverse conditions. A much less hardy animal no doubt than his progenitor of the Bar, the colony camel is at any rate still an important agricultural asset. After a period of acclimatization it would seem to be returning to its own. The backbone of its existence is the demand for replacements in the grantee corps—for reasons not here relevant the corps does not breed its own stock—and the immense carrying trade. For there are whole sections of the agricultural community, unaccustomed to carts, who habitually use camels to carry agricultural produce from the field to the market or the threshing floor. It is these means that enable camel-breeders to subsist and maintain the large number of animals shown in the returns.

106. The number of horses returned in the latest census is a sure sign of prosperity. The possession of a horse is regarded by *zamindars* as a patent of respectability, and it is not uncommon to find as many horses in the village as there are squares. Horse-breeding is greatly encouraged by the efforts of

HORSES AND MULES.			
Year of enumeration.		Horses.	Mules.
1904	...	23,944	1,190
1909	...	37,038	875
1914	...	43,804	793

the Army Remount department, who have control of some 51 horse, 38 pony and 71 donkey stallions. There was some prejudice among Janglis to the use of foreign stallions, now happily a thing of the past. Horses bulk very large at the Lyallpur Fair, some 6,450 animals having appeared in 1914 as against 2,918 in 1911 and 2,105 in 1908. The strain of country bred is steadily improving, thanks to the Army Remount department: all classes are alive to the profits of the trade and not only the Janglis, whose love of horseflesh is proverbial. Mule-breeding is partly a service concern. Now that conditions are strictly enforced, many of these grantees keep two mares in case one should miscarry. For mule-breeding small mares of moderate quality, 13·2 or 14 hands in height, are required; animals of this description are in fairly constant demand. Private mule-breeders are increasing in numbers; in 1913-14 out of 1,100 mules born only some 550 were bred by service grantees: the profits to be made from mule-breeding deserve, and will doubtless receive, wider recognition still. The census returns for mules read rather strangely at first sight. The fact is that the Army Remount department buy up all presentable mules at 6—9 months old: in 1903 they took 130; in 1913, 840; and they hope before long to secure 1,000 annually. What the returns really indicate is a steady rise in the number of animals annually available for military purposes.

107. Donkeys have increased from 23,037 in 1904 to 26,791 in 1909 and 34,569 in 1914. The donkey is an important transport animal, especially where the use of carts is not customary and in the towns. They are mostly owned

by potters, who maintain an extensive carrying trade at harvest time. The rapid increase in their number is only another instance of the general influx of wealth, in which all classes participate.

D.—SOIL.

Classification of soils.

CIRCLE.	<i>Rohi.</i>	<i>Maira.</i>	<i>Kallarathi.</i>	<i>Tibbi.</i>	<i>Relhi.</i>	<i>Rappar.</i>	<i>Misri.</i>	<i>Ravri.</i>	<i>Shor.</i>	<i>Ghatrumukhi.</i>
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Jhang Branch, circle I	1.92	85.38	6.06	...	4.20	.9	...	.90	...	1.45
Jhang Branch, circle II	2.48	89.33	3.68	...	3.05	.13	...	.47	...	.86
Jhang Branch, circle III	.98	91.38	3.39	...	3.79	.39	...	...	...	.07
Gugera Branch, circle I	1.99	95.32	2.01	.01	.43	.68	.05	.02	...	.08
Gugera Branch, circle II	1.24	89.33	3.35	.37	1.86	.01	...	.11	.05	3.68
Rakh Branch	4.71	82.13	8.75	.05	3.40	.09	.02	.64	.01	.77
Extensions	2.69	88.00	7.97	.02	.68	...	...	...	.32	.32
Average, whole Colony...	2.57	88.30	5.07	.09	2.38	.08	.02	.20	.04	1.25

108. This table shows the classes of soil prevalent in the Colony and the proportions, in which they occur.

It is based on a survey made some nine years ago. The tract as a whole is remarkably uniform in the matter of soil and the light loam, of which it is mainly composed, is peculiarly suited to canal irrigation and of great fertility. A broad distinction may be found in the inferiority of the Chenab to the Ravi basin: this is due to the admitted excellence of Ravi silt. The same cannot be said of the Chenab deposits, and it might have been supposed that the constant accumulations of Chenab silt from the canal would produce rapid deterioration. That is as yet happily not the case. It is true the soil has lost its virgin quality and consequently very high rates of yield are less common than in the early years of colonization. But other restorative processes are at work, more labour is available, greater attention is given to manuring, noxious substances have been eliminated, and it may be said generally that there is at present no abnormal deterioration. The characteristics of each class of soil are noted below:—

- (1) *Maira*.—This is a soil of light composition, with a perceptible admixture of sand but no injurious salts, which retains moisture well. It does not require excessive tillage and has shown extraordinary fertility in spite of the heavy strain, to which Colony land is habitually subjected by a somewhat shortsighted peasant try. 88.3 per cent. of the Colony is *maira*: it covers by far the largest area in every circle and is the characteristic soil of the tract.
- (2) *Kallarathi* is culturable soil with a taint of alkaline salts. With *kallarathi* soil the process of percolation is slow: water is apt to remain on the surface: it is this fact which renders it congenial to rice. With copious irrigation *kallarathi* crops do well. The behaviour of this class of soil under continued canal irrigation is a critical question: *kallar* is undoubtedly spreading and the remedy is as yet uncertain. The subject is discussed separately in the following paragraph. At present 5.07 per cent. of the Colony is classed as *kallarathi*.
- (3) *Rohi* is a stiff soil of close texture, entirely free from sand or alkalines, with very durable qualities, which produces splendid crops. It mostly occurs along drainages or round depressions

and is of all soils the most coveted and the most profitable. The constant surface drainage from higher land in its vicinity is the cause of its excellent quality. 2·57 per cent. of the Colony lands are *rohi*.

- (4) *Retli* soil (2·38 per cent. of the tract) contains an excess of sand, but no *kallar*. Patches occur in the true Bar, but it prevails mostly along the Chenab high bank, which borders on the three Jhang Branches and the Rakh Branch. *Retli* soil requires constant irrigation and results are precarious.
- (5) *Rarri* (·2 per cent.) is hard soil, bare of vegetation, off which in its uncultivated state water runs easily. It often contains *kankar* or *kallar*. On cultivation this class of soil is ranked as *rohi*, *maira* or *kallarathi* as the case may be.
- (6) *Tibbi* is the name given to sandhills and land intersected by ravines. Towards the fringes of the desert it occurs most commonly. Sandhills are easily excavated and so rendered cultivable; the operation frequently discloses excellent soil. The amount of land classed under this head is very small.
- (7) *Rappar* has a layer of good soil on the surface not more than a few inches thick, bottomed by pure river sand. It is formed by the deposits of silt on sand during floods. Only ·08 per cent. of the Colony lands fall into this class. It occurs mostly on the Jhang Branch, and Mr. de Montmorency considered it to be scarcely worth the expense of irrigation.
- (8) *Shor* is soil so impregnated with saltpetre as to render it unfit for cultivation. The amount of land so classified is fortunately almost negligible.
- (9) *Missi* (·02 per cent.) is a fine clay soil with an admixture of sand, which makes it easy to work. It is excellent soil, retentive of moisture and therefore well suited to unirrigated crops.

The area classed as *ghairmunikin* is that covered by roads, canals, water-courses, railways, drainages, village sites, etc.

109. From the foregoing remarks it will appear that 5·11 per cent. of the Colony lands are either *kallarathi* or *shor* and the evil is on the increase.

The formation of *kallar*.

By the courtesy of Mr. J. H. Barnes, Principal of the Agricultural College, Lyallpur, who has supplied me with notes of his observations, I am able to attempt an analysis of a situation already serious and likely to become more acute, unless means can be devised to improve it.

The soil of the Colony is an alluvial deposit, formed, like the rest of the Punjab, from rock *débris* by the abrasive action of water, carbon dioxide and temperature changes. The presence of earth salts is explained by "weathering". This is a natural process: as the rock masses are broken up large surface areas are exposed to air and water: chemical changes take place, which result in the formation of salts, chiefly sulphates, chlorides and carbonates of alkali metals and alkali earths, sodium, potassium, calcium and magnesium. Weathering is greatest where comminution is greatest, for instance in sandy tropical countries, since disintegration proceeds most rapidly in extreme temperatures. On the other hand abundant rain will wash away the soluble salts into the sea or other low catchment area, while even a slight slope may suffice to displace them—a fact, which perhaps accounts for the greater frequency of saline matter in the Chenab and Ravi river beds as compared with the high Bar. Nor is this all. In many places irrigation water, applied in excess, has washed the saline matter through to the sub-soil water-table, and where the sub-soil water is close to the surface these salts are, by the evaporation of the water, deposited and form a very persistent species of *kallar*, impossible to deal with except by drainage on a large scale. Irrigation thus tends to accelerate the weathering process and with the rise of the water-table saline matter must undoubtedly come to the surface in greater quantities. A peculiar feature in the appearance of *kallar* is its occurrence in

isolated patches. These patches are always associated with beds or pockets of denser soil in the form of clay and *kankar*. The clay beds represent the still backwaters of the deposit period and their effect is to produce unevenness in the evaporation of water from the surface and eventually the growth of salts, where the evaporation is greatest.

110. It will be clear from this summary of soil conditions that the Colony presents all the features favourable to an increase of earth salts—insufficient rainfall, little or no lateral movement, whereby the salts might gravitate to a lower level, sandy soil, a wide range of temperatures to assist weathering, and lastly surface irrigation, which is bound to affect the sub-soil water level. It is also clear that the removal of these salts is anything but a simple problem. Mr. de Montmorency, in his first Upper Jhang Branch report, paragraph 3, wrote: “For the cure of *kallar* in virgin soil copious water, and for the cure of *kallar* in old land a reduction of supply, seem to be the factors indicated.” That is far too wide a generalization, for though water, freely applied, may dispose of saline matter for the time being, it is still present between the surface and sub-soil water and will reappear when the sub-soil water reaches the surface. To be certain of its successful removal drainage water must be discharged into the rivers or the area of evaporation and salt deposit limited. Each case has, in fact, to be decided on its merits. Flushing is sometimes successful with light sandy soil. On the Bahlak distributary, for instance, at allotment the *kallar* deposits were so extensive that whole villages had to be abandoned. It was decided to give an extra supply of canal water to the *mauzas* most effected—with very promising results. The auxiliary pipes have now been removed from several of the *mauzas*, where conditions have become normal, and even where they still remain there has been some reduction in *kallar* already. Unfortunately the permanence of these improvements cannot be guaranteed: it is not enough to force salts into the soil by inundation: where the water-table is rising the salts may rise again by capillary attraction. There is also the risk of removing beneficial as well as noxious salts, for all salts are not injurious. The removal of *kallar* is, in fact, a problem far too complicated for empirical and unscientific treatment.

111. Mr. Barnes is himself conducting experiments on lines designed to meet all the contingencies alluded to above. Their object is to discover the cheapest and most efficient method of lateral and subsoil surface drainage in a light soil, extending to some depth, where there is surface irrigation with a water-table far below the reach of capillarity. The method employed is first to irrigate the saline lands and then draw off the water employed in irrigation. To achieve this the land is mole-drained at a depth of 2 feet 6 inches or 3 feet by the aid of steam tackle. The mole holes so formed discharge at a gentle slope into an open tank made to take the drainage water, which will then evaporate by the sun's heat, leaving a saline deposit. The quantity of salt removed will be ascertained by chemical analysis. Mr. Barnes' operations are still incomplete, and it is unfortunately not yet possible to estimate the results of the experiment.

E.—CULTIVATION.

112. The standard of cultivation is high, but the intense conservatism, characteristic of all classes, is a serious obstacle to progress. Each cultivating caste has its own tradition, and *zamindars* are at one only in their comparative disregard for modern methods. The extent, to which foreign implements are employed, will receive separate notice. No doubt time will bring changes in this, as in other, matters. The diffusion of weeds, for instance, everywhere much facilitated by the network of small village watercourses, is an inconvenience which will be eliminated, or at least greatly reduced, with the growth of population. At present the large size of the holdings precludes systematic weeding; even the most laborious of cultivators find it beyond their powers, except in the case of sugarcane and vegetables. Janglis and Balochis are less

diligent than the immigrants in the eradication of weeds. *Ak*, *bathu*, *poli*, *piuzi* and *daryai* are the principal pests of this description. *Piazi* appears in poor or exhausted soil and spreads with alarming rapidity. *Ak* is too familiar to require more than a brief notice: on canal banks it has some protective value, elsewhere it is a nuisance as ubiquitous as it is difficult to destroy. The *poli* thistle, which flowers in May, is now covering the country and its removal is almost beyond the capacity of manual labour. The system of *kiarabandi*, or field partition, is described elsewhere. The ridges between fields, as well as the watercourses, protect the crops. Near *abadis* or village roads more elaborate fencing is adopted. This may take the form of a brush-wood hedge or mud walls, the latter erected by wandering Pathans in the winter months. Rows of trees, *kikar*, *ber* or *shisham*, are also employed. Borders of *sankukra* and *jowar* are often sown round sugarcane or maize as a defence against intruders. The amount of labour given to the preparation of fields for crops varies very widely. For sugarcane and other valuable crops ploughings are numerous enough: gram, *chari* and *bajra* require and receive less. But this, as well as other matters connected with cultivation, cannot be reviewed exhaustively in this place.

113. Ploughs now number 125,013. The increase in recent years shown

Implements of agriculture.					
Year of enumeration.				PLOUGHS.	Number.
1904	...	...	...	106,376	
1909	...	...	...	115,818	
1914	...	...	...	125,013	

in the margin is more than commensurate with the expansion of cultivation. The effect of this increase in ploughs is to circumscribe the area assigned to a plough and so make for improved cultivation; whereas formerly about 14 acres would be worked by a single plough, 10 or 12 acres now usually suffice. Country models still hold the field: two types are in general use, the *munna* or slant-handled plough of the Manjha, and the *hal*, which has a straight handle. Of imported inverting ploughs the "Rajah" is most popular: with a pair of average cattle the Rajah will plough a furrow 5 inches deep by 7½ inches wide: with larger draught power it will go as deep as 8 inches. The "Meston" is a light draught plough, much less efficient than the Rajah but advancing in the public estimation. There are about 400 Rajah and 200 Meston ploughs in the colony. Crops are still harvested almost entirely by hand, but reaping machines are by no means uncommon. There are 111 in the Lyallpur district, of which 86 were used in the *rabi* harvest of 1914. The ridges between fields interfere somewhat with their smooth working and a more serious objection is the inability of the local *lohar* to repair them. The introduction of reaping machines is opposed by labourers, who lose employment thereby and very often also some of the gleanings they would otherwise obtain. The chain harrow meets with approval, but is much too expensive at its present price. The Agricultural department is experimenting with cheaper substitutes. Chaff-cutters, spring-toothed harrows, horse hoes, and Gujrat hoes are all used to a certain extent. With these exceptions indigenous implements are the universal rule—the *sohaga* for crushing clods after ploughing, the *jandra* or rake for levelling, the *datri* or sickle for reaping, besides others which need no special mention.

114. The soil is always irrigated before sowing (*rauni*) and ploughed

Sowing. up a few days later. After this the actual process of sowing begins, in one of three ways, by drill (*pora*), broadcast (*chhatta*), or along the furrow made by the plough (*kera*). The first method is best, but as it requires skill and experience it is consequently least in favour, holdings being as a rule too large. *Kera*, which, like *pora*, protects the seed from the force of the wind, commands a fair following, though laborious. Broadcast sowing is almost universal, because it is the cheapest and most expeditious process. *Pora* and *kera* are to be commended, where moisture is deficient in the soil: here, owing to *rauni*, conditions are favourable to *chhatta*. A proverb presents the case in a nutshell: *Pora badshah, kera wazir, te chhatta faqir*. Sugarcane is of course grown from cuttings, taken from the ripe canes and buried in a heap (*tig*) until re-

quired. *Zamindars* have recently begun to sow cotton and maize in lines, using the native plough or other implement for interculture. Much better results are secured in this way; as regards maize the process is easy enough, but cotton needs a certain amount of attention to ensure good germination.

115. The importance of manure is now generally recognized. It was not always so: the virgin soil of the Bar yielded crops in abundance and *zamindars* were spared much of the labour usually expended upon crop production. But these palmy days could not last for ever. In due course the process of exhaustion asserted itself and colonists had to resort to artificial means of fertilization. Intensive cultivators (*Arains*, *Kambohs* and *Sainis*) were naturally in the van; for the valuable crops they favoured—melons, tobacco and garden produce—manure was in fact indispensable from the first. Maize, *senji* and sugarcane are similarly treated. *Jat Sikhs* and *Musalman*s have followed suit, but with less ardour than the intensive cultivators: cotton and maize are the crops to which they usually apply manure, wheat and *toria* seldom. *Jangli* produce more manure on account of their partiality for cattle, but employ it least systematically, and mainly on fodder crops (*jowar*, turnips, etc.). Colonists can only hope to manure one or two acres in each holding, and the cost of cartage results in preferential treatment for fields fairly close to the village site. The *Jangli* practice of keeping cattle in paddocks away from the *abadi* enables them to give a wider range to their operations in this connection.

116. The dung of cattle is of course the most universal of manures. In earlier days, when the jungle had been denuded of brushwood and brought under the plough, dung cakes were largely used as fuel, but with the progress of arboriculture the supply of wood is rapidly increasing: dung cakes are, however, still always used to heat milk. Farmyard manure is stored in heaps on the waste land outside the village *abadi*—an excellent practice from the sanitary point of view, but one calculated to result in loss of material and deterioration in quality. Storage in pits is best of all, but at present little known. Farmyard manure may consist of cattle dung alone, or mixed with the ashes from the *chuhla*, sweepings from roads and floors, bedding such as sugarcane leaves or waste *bhusa*, and the dung of animals other than cattle. Reference has already been made to the custom of folding sheep and goats for a time on selected fields. Other forms of manure are not very commonly used. The valuable manurial properties of the earth, upon which cattle have been standing or dung cakes dried, is sometimes recognized by expert cultivators: the same is true of old walls, which may contain valuable salts, or mounds consisting of soil very finely deposited and consequently useful as a soluble plant food. Town sweepings fetch one rupee a ton in *Lyallpur*, a fact which sufficiently attests their merits. Green manures are of the greatest service in renovating light sandy soils: this practice, fostered by remissions of water-rate, is gaining ground: all that is really required is a wider knowledge of its undoubted advantages. *San* hemp and *gawara* are occasionally used in this way. *Toria* stalks, formerly universally used as fuel, are now often ploughed in for the benefit of the succeeding crop. Bone manures have been used with good effect by *Rai Sahib Sewak Ram* at *Gangapur*.

F.—CROPS.

117. The table opposite shows the percentage of crops by circles. In each case the average for the last five years is quoted. The *Chenab Colony Gazetteer* and *Assessment Reports* contain a mass of information on the subjects of crops, which need not be reproduced here. It is, however, important to determine the causes responsible for the preference given to certain crops in certain areas. The circles are sometimes sharply distinguished in this respect and the fact has an intimate relation to the assessment. Export is for the moment dislocated owing to the War and a period of fluctuation in the price of wheat, *toria* and cotton has set in. But these accidental and temporary conditions hardly affect the validity of the conclusions to be drawn from recent tendencies.

Statement showing percentage of assets for the year 1



118. Wheat is by far the most important colony crop and the principal staple in every circle. Its increasing popularity is due to high prices and constant demand. It is a very robust crop and, though occasionally damaged by hot winds and hailstorms, seldom fails. It can be grown on every class of soil and requires very little water. The better class of *zamindar* is also very partial to it as an article of home consumption, and the best wheat is always withheld from the market for this purpose.

Wheat, 44·4 per cent.

Lyallpur wheat is well thought of by exporters and it would command a higher price, if it could be shipped separately and measures taken to prevent its adulteration with water and dirt in the *mandis*. The principal varieties are *lal kasarwali*, *chitti*, *ghoni* and *vadhanak*. The first of these has all the virtues: it commands a good price, succeeds in most seasons, requires comparatively little water, has a strong straw and does not shell too quickly. As it also keeps well and is comparatively safe from weevils, it is the most universally favoured. *Ghoni* is a beardless wheat with weak straw. Its yield is good and little water is required to mature it, but it ripens too quickly and shells rapidly on maturity. *Vadhanak* is a tall, heavy wheat. It needs more water than any other class, and its weight causes it to blow down easily, if heavy rain or winds occur at harvest time. Otherwise it is a sound wheat, heavy in the ear, and produces flour of good quality. Wheat land is ploughed 6 or 8 times by the best cultivators and 3 to 5 waterings suffice for a crop. One good rainfall will serve the purpose of two waterings from the canal.

Varieties of wheat.

119. *Toria* has only recently come to the front. Conditions are in fact very favourable to this crop. It flourishes on the light loam, of which the Colony is so largely composed. Two waterings after sowing suffice to bring it to maturity and it only occupies the ground $3\frac{1}{2}$ months. Once sown it requires little attention and it ripens at a time, when *zamindars* need money to meet the *kharif* demand. It is a speculative crop and appeals to the gambling instinct, inherent in all tillers of the soil. Its delicacy is notorious: *tela*, frost and rain all militate against it. Of late, however, fortune has favoured the *zamindar*: partial failures occurred only in 1905 (from *tela*) and 1911 (from excessive cold): autumn rains have assisted early sowings and high prices stimulated supply. The large areas everywhere devoted to *toria* make it one of the most important crops; in two circles, Gugera Branch II and the Extensions, where camel grantees are numerous, its prominence is partly due to the value it possesses in the green state as fodder for camels.

Toria, 10·8 per cent.

120. Cotton is popular everywhere, though outturns fluctuate on account of periodic failures. In 1905, 1906 and 1911 bollworm was responsible for the damage: in 1908 excessive rain reduced the crop by at least one-half. During June and July cotton depends on the early summer rains to check the increase of bollworm. Upon the subject of this pest Mr. Madan Mohan Lal, Assistant Professor of Entomology, Lyallpur, recently formulated the following conclusions as the result of research: "The bollworm in all cases disappears rapidly and steadily after rain. It is easy to understand the action of rain in this case. Affected buds, flowers and early bolls are weak: they are washed off the plants by rain and the bollworms inside them are drowned upon the ground. The process is very much facilitated when a good shower of rain is preceded or followed by a breeze, which shakes the plants." Unfortunately an early monsoon is rare at Lyallpur, though rain in August, which has no direct influence upon bollworm, is common enough. Recent high prices and the keen demand from millowners have largely counteracted these natural disadvantages, and cotton has now regained a prominent position in the crop returns.

Cotton, 8·4 per cent.

Cotton is the staple *kharif* crop and next in importance to wheat. On virgin soil, with hardly any preparation, outturns of 10 to 15 maunds of cotton per acre were commonly reported. Latterly the yield has dwindled to a general average of 4 or 5 maunds. This crop is remarkable for the wide

Quality of Colony cotton.

range of foreign varieties, with which colonists have experimented—details are recorded elsewhere. The best Indian varieties do not occur. Those found are somewhat lacking in colour and fibre. They command 1d. to 1½d. per lb. less than higher class cottons. Settlers naturally favour the varieties, to which they were accustomed in the old home. Red Multan has many votaries, especially among colonists from the western Punjab, but yellow-flowered Hansi cotton is perhaps commonest of all. Fibres are short and coarse or long and silky, the latter being the most desirable. Yellow cotton is not favoured by exporters. The colour of the cotton produced in the Colony is not particularly good. This is due to the practice of “damping”, i.e. keeping the unginned cotton in pits to increase the weight. Moisture is thus admitted and the fibre deteriorates both in colour and strength. The *samindar* is seldom to blame, except for carelessness in picking and storing. With greater care in its treatment by factory owners and exporters Colony cotton would not suffer from some of its principal drawbacks. These are the presence of peppery leaf, the mixture of good and damaged fibre, which results in a cotton spotted with yellow stains, and the admission of seed into the finished article, which increases weight at the expense of quality and ultimately discredits both producer and product.

121. Gram emulates the modern popularity of *toria*. It is an undoubted fact that Bar land has become more suitable to gram. Gram is sometimes sown and matured with the aid of rainfall alone. More often it is sown in *toria* with the last watering and matured without further assistance from the Canal: too much canal water is in fact rather injurious. It requires little attention and flourishes on a light soil with inferior command. These causes suffice to account for its position in the crop returns. In the proprietary villages gram is very successfully raised on *sailab* land inundated from the overflow of the Deg *nala*.

122. Maize is grown for home consumption. Though well suited to the Colony, its unpopularity with exporters has caused it to decline. A fixed area under maize is, however, a tradition with Punjab cultivators: possibly wheat may replace it as an article of diet with the increase of wealth, but maize will always have a steady vogue and occupy as it does at present a definite portion of each circle.

123. Sugar is an alien growth in the Colony. Requiring as it does constant attention, good soil and regular water, it finds favour only with expert cultivators from the central Punjab, though Janglis produce it in small quantities for fodder. Its practical exclusion from all but three circles is thus explained. Gugera Branch circle I is fortunate both in the quality of its soil and the class of its colonists: the Rakh Branch has even better cultivators, but slightly inferior soil: Jhang Branch circle III is mainly composed of sandy loam, fit chiefly for *rabi* crops, but it was largely colonized by Hoshiarpur Arains and other mid-Punjab cultivators of good repute. Elsewhere the Jangli, Baloch or western Punjab element predominate and sugar is a negligible quantity. The Colony soil and climate is not particularly favourable to sugarcane, the juice extracted being inferior both in quality and quantity to the output of some other localities, where this crop is raised. *Katha*, a thin yellow cane, is more popular than the other varieties (*ponda*, *kahu*, *metha*, *dharula*): it is less affected by cold, more immune from the depredations of insect pests, requires less water and produces a sweeter juice, though thin canes take longer than thick to strip for the press. Very great labour is expended upon the preparation of soil intended for sugarcane, 10 to 20 ploughings, and 4 or 5 levellings with the *sohaga*. Water is applied 15 to 20 times in all. Iron mills (*belna*) are universally employed for pressing.

124. Rice is confined to stiff *kallarathi* soil, impervious to water, but copiously irrigated. These conditions obtain chiefly on parts of the Rakh Branch and in the proprietary villages subject to inundation from the Deg *na* *a*.

Fodder crops, 17·1 per cent.

125. Fodder crops include the following :—

Kharif.—*Jowar, chari, moth, rawan, sanwak, gawara.*

Rabi.—*Senji, mainan, turnips, oats, sarshaf, taramira, melhra, kasumba.*

These are grown almost entirely for home consumption. *Jowar-chari* and *senji* are the most important. *Jowar-chari* is generally preceded by wheat: manure is not usually applied and 2 or 3 ploughings suffice. *Senji* is extensively sown in October and November in cotton or maize with no special preparation—the results are often astonishing. Turnip tops are given to cattle in the green state, the roots remaining in the ground: these latter are dug up subsequently and similarly disposed of. The almost universal taste for cattle-breeding postulates a substantial area under fodder crops in all circles. Variations are slight: we may, however, detect a distinct fall in the returns for circles like the Rakli Branch and Gugera Branch circle I, where the immigrant *abadkar*, who is content to limit his live stock to the exigencies of agriculture, is in the majority, and conversely, the presence in force of the Jangli element, staunch adherents to the pastoral tradition, especially when the proximity of large grazing grounds enables them to keep more head of cattle than their brethren in more circumscribed areas, produces an opposite result. The figures for Jhang Branch II, Gugera Branch II, the Extensions and Proprietary villages are thus explained.

126. Miscellaneous crops include *bajra* (·9 per cent.), which is peculiar to the Jangli and Hithari tribes: barley (·9 per cent.), a crop of little importance,

Miscellaneous crops.

seldom grown on the best land and generally for fodder: and melons, which command a ready sale and only require light sandy soil. Indigo is used for dyeing, *san* and *sankukra* in the manufacture of ropes. Tobacco is cultivated mainly by Arains and Jat Musalmans for home consumption. Vegetables, of which the principal varieties are carrots, potatoes, cabbages, peas and onions, occupy a considerable area. Fruit gardens are maintained on small plots by large owners: oranges (country and Malta), plums, pomegranates, limes, apricots, peaches, loquats, grapes, pears, and mangoes are among the fruits favoured. Oats are practically confined to Cavalry Stud Farms and Army Remount allotments.

सत्यमेव जयते

127. Chenab colonists are greatly interested in seed selection, having the leisure, affluence and acres to experiment with exotics. Of course the

Seed selection.

amount of attention given to this branch of agriculture varies with different tribes and castes: all are not as careful as Arains and Kambohs. Little difficulty is experienced as a rule in saving seed from one harvest to another, and the offices of the village shop-keeper are seldom requisitioned. To pass to concrete instances, American cotton has made very considerable way, the output last year being estimated at 10,000 bales. Egyptian cotton is, however, a failure, while the Assam variety, though attractive to the eye on account of its large bolls, is not a commercial success and occurs very rarely. Oranges, Kabuli melons, Mauritius sugarcane, and western lucerne are all successful innovations, not to mention potatoes, roses (for *attar*), jute and linseed grown for fibre, and turmeric. Of late much progress has been made towards the introduction of pure wheat varieties: Punjab type no. 11 is growing in popularity. This was introduced by the Agricultural department, whose services at Lyallpur in this connection are of the greatest value to *zamindars*.

128. The beneficial results of periodic rotational changes in cropping are generally recognized by colonists, but where custom and tradition vary so

Rotation of crops.

widely, it is difficult to lay down hard and fast rules of procedure. The most elementary principles are often violated by absentee landlords, who aim at nothing but pecuniary profit, and far too much reliance is placed in the fertility of the soil, which is still buoyant enough to survive the most pernicious abuses. Briefly, *zamindars* expect to mature cent. per cent. of their holdings, and so far they have very largely succeeded. This does not mean that every

field bears a crop in each year, but that deficiency in one direction is made up by excess in another. For instance, a field occupied by sugarcane in one year is probably fallow the next : on the other hand, maize may be succeeded by *senji* and two crops secured in the same year. Large owners sometimes divide their lands into *kharif* and *rabi chaks*, each *chak* for a term of years bearing a crop only in its allotted harvest. Thereafter, the order is reversed and *rabi* crops are grown, where the *kharif* harvest appeared before. This procedure is commonly followed on a small scale by lesser men.

129. The Colony is unique in the large area devoted to cereals, a fact which makes it very difficult to keep up soil fertility through the growth in adequate quantities of leguminous crops, such as gram, *senji*, *gawara*, *moth* ; these with their root nodules leave the soil richer in nitrogen than before. *Senji*, *mainan* and *rewari*, however, sometimes grow wild in wheat and their presence has a restorative effect. But wheat and *toria* are fortunately not very exhausting to the soil in which they grow. *Chari* is the most injurious crop in this respect ; *bajra* and cotton are nearly as bad. Sugar and maize also exhaust soil, but their ill effects are neutralized by heavy manuring. Common examples of rotation are *kharif* fodders after wheat : cotton after wheat or *toria* : turnips, gram and *senji* in cotton and *toria* with the last watering given to the standing crop : wheat, gram and barley in the "*wadh*" of maize, millets and *kharif* fodders. Cotton may not follow cotton, but wheat may follow wheat : sugarcane sometimes succeeds maize and *senji*, or maize wheat, or gram *chari*, or *chari* wheat, but not wheat *chari*. Mixed crops are very common. *Jowar* is almost invariably grown with *gawara* or a mixture of pulses. Pulses are similarly blended with cotton, and *mash* or *mung* with maize. *Senji* is often sown in September with cotton and attains a fair growth before the cotton pickings are over. Gram and barley and gram and wheat are also sometimes mixed and *sirshaf* is often sown, broadcast or in lines, together with wheat.

130. Crop distribution, as between *kharif* and *rabi*, affords an interesting study. Fluctuations were to be expected, but not the steady decline in the popularity of the *kharif* crops, which has been so marked a characteristic of Colony returns in recent years. Thus the percentage of *kharif* crops to the total matured area fell, between the years 1902 and 1908, from 33 to 28 on Jhang Branch I, from 30 to 25 between 1902 and 1908 on Jhang Branch II, from 30 to 21 between 1903 and 1908 on Jhang Branch III, from 36 to 27 between 1903 and 1908 on Gugera Branch I, from 26 to 24 between 1906 and 1910 on Gugera Branch II, from 30 to 23 between 1907 and 1911 on the Rakh Branch, and from 34 to 24 between 1907 and 1911 in the Extensions and Proprietary villages. Government would like to see a closer approximation between the *kharif* and *rabi* area, though it would require radical changes in the schedule of occupier's rates to produce a material increase in the *kharif* area without at the same time diminishing the present income from occupier's rate.

The causes for this tendency to concentration on the *rabi* harvest are somewhat obscure. The immigrant castes have a keen eye to business and adapt themselves with commendable alacrity to the fluctuations of the market. With Janglis it is rather different : tradition counts for much and tradition is in favour of a substantial area under *kharif* crops. The decline in *kharif* areas is thus partially explained by economic considerations. The popularity of cotton received a set back after repeated failures and has only recently revived : sugar just holds its own : *toria* and gram are advancing for special reasons already described : wheat has an assured position, from which it is not likely to be displaced. Soil throughout is certainly more favourable to *rabi* crops. But these are contingent factors, on which too much stress should not be laid. The real cause lies not so much in any special characteristic of the cultivating community or in climatic considerations, as in the exigencies of water-supply. *Zamindars* are unanimous in the opinion that increased severity in the application of *waribandi* to *kharif* crops lies at the root of the matter. The annual closure of the canal in April limits the supplies of water for early sugar and cotton

sowings at a critical period. The Financial Commissioner stated the case succinctly in paragraph 17 of his review of the Rakh Branch Assessment Report :—

“It is sometimes supposed that the cultivator is stupid or perverse in abstaining from cultivating a larger proportion of crops in the autumn when the river being full, the canal carries maximum supplies. But it is an undoubted fact, which is fully borne out by statistics, that notwithstanding these favourable supply conditions the *kharif* waterings available do not suffice to mature even the limited area of *kharif* crops with the same certainty as the limited *rabi* supply matures the large area of winter crops *Kharif* crops cannot stand long rotational closures and, owing to evaporation and absorption, a cusec of water in the hot season has a duty far below that of the same volume in the *rabi*. It is, therefore, not a case of the *kharif* supply being left unutilised. It is rather that the *rabi* supply is being more and more economized and made to go further.”

G.—TENANCIES.

Varieties of tenure, showing percentages under each head.

Name of circle.	Auction purchasers, capitalists and proprietary well-owners.	Yeomen.	Peasants.	<i>Inamdar</i> grants; allotments to <i>kamins</i> , <i>lumbardars</i> , camel <i>chaudris</i> , the Army Remount department, cavalry regiments; allotments on mule-breeding conditions.
Jhang Branch, circle I	53	54	83.3	6.0
Jhang Branch, circle II	54	98	78.9	5.9
Jhang Branch, circle III	73	31	83.1	6.5
Gugera Branch, circle I	11.7	13.5	69.7	5.1
Gugera Branch, circle II	23	25	86.7	8.5
Rakh Branch	8.1	9.7	75.0	6.9
Extensions	6.6	6.9	81.1	5.4
WHOLE COLONY	7.1	8.2	78.3	6.1

131. This table, from which the Proprietary villages are, for obvious reasons, excluded, shows the varieties of tenure in the Colony. The process of colonization, which resulted in this distribution, is described in paragraphs 4 to 11. As regards the proportions in which the different classes occur, the circles do not vary widely from the average for the whole Colony; all have their contingents of yeomen, auction purchasers, capitalists and peasants. *Nazarana* grantees appear in force in Gugera Branch circle I; peasants, on the other hand, are most numerous in Jhang Branch circles I and III and Gugera Branch circle II. In Gugera Branch circle II the presence of the camel service grantees gives a characteristic complexion to the returns, the extensive peasant allotment consisting largely of camelmen, while the miscellaneous grants are swelled by the holdings of their *chaudris*. With these exceptions the statistics exhibit no abnormal features. As a rule the classes are isolated in villages peculiar to their own kind, but peasants and yeomen often received grants in the same *mauzas* and share a single *abadi*. At present colony *mauzas* still bear the impress of their original character and may be readily identified as peasant, yeoman, etc., almost at sight. What will happen when every colonist is a full proprietor, restrained in the exercise of his right of free alienation only by the Land Alienation Act, is largely a matter of conjecture. *Nazarana* grantees were of course always at liberty to purchase after a term of years and the due fulfilment of certain conditions: auction purchasers were proprietors outright, but peasants have only recently been authorized in this connection (*vide* paragraphs 26-28). It has always been a matter of common knowledge that many large holders severed their connection with the Colony immediately upon the ac-

quisition of proprietary rights by the sale of their colony holdings. Signs are not wanting in the peasant world of an inclination to follow suit. It is too early to forecast the probable effects of this tendency ; no doubt it will result in the elimination of unsubstantial persons, who never were and never would be serviceable colonists ; it will enable natural leaders to improve their status and rise above the common herd : but it must also surely help to the further disintegration of a society already weak in communal feeling and make motley agglomerations of some well-established settlements.

132. The scheme of colonization was framed primarily in the interests of the peasant farmers, who now compose 78·3 per cent. of the whole Colony. Yeomen, capitalists and auction purchasers were introduced in suitable proportions to act as leaders of society. Yet even this moderate infusion of large holders (15·3 per cent. of the whole Colony) must, in the light of subsequent experience, be pronounced a failure. The yeomen were at least agriculturists by origin. The grants to capitalists and auction purchasers, on the other hand, were not confined to *zamindari* families and the condition of personal residence, upon which in the case of yeomen some insistence was laid at one time, never existed for them. These gentry came to regard their Colony holdings as nothing more than a source of profit, upon which as little as possible was to be expended, and in the public view, so far from obtaining acceptance as natural leaders, they were often looked upon as *parvenus*, who had bought themselves into a society whose interests they did not share. As far back as 1895 Captain Popham Young remarked on the unsatisfactory characteristics of the *nazarana* classes. In 1901 their shortcomings were frankly admitted. Deputy Commissioners were loth to forego the services of leading men in the old districts ; exemptions from personal residence had to be freely granted ; " reward " grantees were generally past their prime and unwilling to end their days away from the associations of home, amid the bustle and discomfort of colonial life ; those who came generally failed in the rôle of local magnate, and the Colony officers realized too late that a yeoman class was not to be created by conscious selection but in the sterner process of evolution, whereby thrift or capacity could secure its proper opportunity and be fittingly rewarded. It would, however, be unfair to brand the entire community with the stigma of ineptitude ; there are bright exceptions to this tale of disappointing achievement. But the account as a whole shows an adverse balance. Nearly all the large grantees are now proprietors, though few of them reside and some never visit their holdings at all. The attention, which their *abadis* receive, differs widely. In the older circles each grantee has a separate homestead on his own squares ; later they were assembled in a joint village site. Some of these settlements are the merest ruins, others are creditable collections of brick buildings. The quality of the tenants and the degree of permanence in their relation to the landlords varies accordingly. But generally speaking the characteristics of these *mauzas* are the same throughout the Colony -- endless dissension when the grantees reside, a negligible *khudkasht* area, a migratory and discontented tenantry.

133. Peasants include immigrants from other districts, Bar nomads, compensatory grantees of the Chenab and Ravi riverains, and pensioners, grants varying from a few *killas* to 2 squares. The peasant allotments have proved as signally successful as the *nazarana* grants were unsatisfactory. The majority of the peasants are now proprietors. Their *abadis* usually present a most attractive appearance. The influx of wealth into the Colony has stimulated the growth of *pukka* houses and enabled *zamindars* to provide themselves with many of the luxuries, as well as nearly all the necessities, of life. Attention is given to arboriculture and fine mosques and *dharma-salas* are a feature of these flourishing settlements. The Jangli *mauzas* are models of cleanliness, in no way inferior to the rest. Of pensioners the majority are old soldiers, and as they have their pensions as well as grants of 2 squares each, they are an affluent body. Contact with the civilization of cantonment has

given them tastes and standards superior to those of the untutored *zamindar*. Their villages are consequently in good order as a rule—the income from pensions contributes materially to the well-being of *fauji* villages. They are not enthusiastic cultivators, but personal relations with the pensioner class, when they are not too importunate with their grievances, can be very agreeable.

H.—RENTS.

Cultivating occupancy (showing percentages of circle areas under each head).

Circle,	Owners or Government tenants cultivating in person.	PRODUCE RENTS.		Cash rents.	Rents at revenue rate.
		Half produce with half demand.	At other rates.		
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Jhang Branch, circle I	66	20	6	5	3
Jhang Branch, circle II	57	22	11	4	6
Jhang Branch, circle III	57	25	8	5	5
Gugera Branch, circle I	55	35	2	5	3
Gugera Branch, circle II	49	41	1	6	3
Rakh Branch	56	26	6	7	5
Extensions	43	45	3	6	3
Proprietary villages...	39	48	7	2	4
Average for the whole Colony	55	33	2	6	4

134. In nearly every circle the majority of grantees cultivate in person.

Khudkasht.

This is due to the preponderance of peasant holdings in the Colony. Personal cultivation, involving as it does personal residence, is and must be the bedrock of every colonization scheme, since it is only by creating for the colonists a permanent link with the soil they have received that stable development can be assured. Immigrants invoke the aid of their relations or a hireling, known as *sanji* or *arthri*. This personage is sometimes a superior being of *zamindari* status, sometimes a *chuhra* or *chamar*. Payment is made in kind, ranging from one-fifth to one-eleventh of the produce with food. A *chuhra arthri* may be employed to cart manure, but not the *sanji* of a cultivating caste. The maintenance of the proportion cultivated in person is so far satisfactory. There were signs of a decline in the Jhang Branch circles, but the latest returns afford no ground for criticism. The Rakh Branch, now 22 years old, has a good reputation in this respect, which augurs well for the Colony as a whole. The fall in Gugera Branch circle II and the Extensions is due to special circumstances. Here Baloch camel grantees, who generally cultivate vicariously, form a large section of the peasant population. There is, it may be further observed, a close relation between *khudkasht* and the presence or absence of tenants in adequate numbers. Grantees may forego the labour of cultivation for personal reasons—luxury, disinclination for physical effort, the attraction of the old home; but unless tenants are forthcoming, *khudkasht* is the only course possible.

135. Of produce rents half *batai* with half demand is the prevailing

Produce rents.

example; where this occurs, landlord and tenant share the produce and pay all the Government charges in equal proportions. This is the normal produce rent on *nahri* land; others exist in infinite variety, but over much smaller areas; for instance, two-thirds *batai* with three-fifths demand; one-third *batai* with the whole, two-thirds or one-third of the demand; one-fourth *batai* with the whole demand. The more favourable rates are granted when virgin land has

to be cleared and levelled, or the soil is of poor quality, or the tenant has some claim on the generosity of the landlord, or the area rented is irrigable only by *jhallars*. Leases at revenue rates without payment in kind are generally confined to cases where the landlord's relatives assisted from the outset with financial aid or personal service in developing a grant.

136. Cash rents call for detailed analysis alike on account of the steady rise in rates and the increasing area of prevalence. On land so rented the tenant pays not only the canal charges, but land revenue, owner's rate, *malikana* and cesses as well. Subject to this proviso, he is at liberty to cultivate as much or as little of the tenancy as he desires with what crops he may choose. The significance of these rents was at first somewhat minimized by the assessing officers, and they were in fact largely negligible in the early stages of Colony history. A salutary rule, in operation long before the passage of the Colony Act, prohibited Government tenants from leasing their land for more than a year at a time—its object being to encourage personal residence. In those days tenants believed, and rightly, that cash rents were regarded with disfavour by the authorities as indicating unwillingness to settle permanently in the Colony. And they were naturally anxious to avoid offence at a time when all breaches of colony conditions were seriously regarded. But with the acquisition of proprietary rights personal residence was no longer compulsory, while the new Colony Act presently gave enlarged powers to occupancy tenants and tenants-at-will to alienate their holdings by means of sub-leases. The increase in the area of prevalence is thus largely explained, while for the enhanced rates the recent rise in prices is chiefly accountable.

Rents of this description are most commonly found in auction purchaser, capitalist and yeoman holdings, owned by absentee landlords. These gentry allow their agents a free hand, and the agents only too often pursue their private interests to the detriment both of estate and owner. Lands are frequently leased for a number of years at a time and payment taken in advance. Sometimes the agent is himself lessee and *sarbrah lumbardar*, receiving his salary in the form of a concession rate. In such cases it is obvious that the rents recorded must be a long way short of the real net profits.

In peasant holdings, grantees give out a portion of their holdings on cash rents, and the terms on which they lease it, depend on various considerations of caste and custom. Arain villages have usually a superfluous population of landless dependants, to whom—it must be recorded to their credit—the richer members of the community are usually generous enough. Sikhs, on the other hand, have a keen eye to profit and generally make a good bargain even with their own co-religionists. The pressure of population on the soil has naturally much to do with a right understanding of this complicated question. To this may be attributed the greater frequency of cash rents on the Rakh Branch, as compared with other circles: the Gujranwala portion, however, has always suffered severely from plague and even now tenants are not always available. Custom exercises a larger influence than one would expect—and cash rents are a modern innovation. Thus Janglis, unmoved by considerations of profit or policy, are averse to the presence of alien immigrants in their midst, though Balochis have no such scruples and admit them freely. The Gujranwala Jats, again, maintain traditional relations with their tenants and the fact gives a characteristic complexion to the returns from their localities, where cash rents are of little account.

137. From this medley of conflicting tendencies it is no easy matter to isolate the true competition rents or deduce general principles. In no single instance can the statistics be accepted as an assessment guide without scrutiny. It cannot be stated in general terms that good or bad land is habitually leased in this way, though quality of soil, and still more conditions as regards water-supply, are cogent factors in determining rates. Cash rents seldom rule high

in tail villages and remoteness from *mandis* naturally has a depressing effect. In one village a widow had leased land at concession rates to her paramour; in another a guardian was wasting the substance of his ward and only reimbursed a nominal sum by way of discharging his duties. There is certainly a tendency to make over inferior or, in the case of a large grant, superfluous land to relatives on easy terms. But it must not be supposed that fluctuations from the normal are always in the direction of reduced rates; *per contra* it is not uncommon for a lessee to make a bad bargain and abscond rather than fulfil his contract. Again, in Gugera Branch circle II a whole set of rents had to be ruled out as being in the nature of debt adjustments between *zamindars* and money-lenders under cover of a fictitious lease, known as a *theka*; these obtained chiefly among Baloch and Jangli grantees—a class habitually careless in money matters.

In most of the early assessment reports these subtle distinctions were imperfectly appreciated with the result that the value of the statistics quoted was seriously impaired. The table below reproduces the only reliable figures to be gleaned from the first five reports. It is the custom for tahsildars to dispose of lands belonging to minors by annual auctions at the instance of the District Judge: the areas are not extensive and public opinion among caste fellows often confines the bidding to a narrow circle; nevertheless the results of these auctions may be taken as genuine indications of the real letting value of Colony land.

On the Rakh Branch cash rents were subjected to a stricter scrutiny and all but competition rents excluded. The figures pertaining to this circle, here displayed, are the product of the investigation and a very valuable index to recent tendencies. Statistics are shown for 12 years, although dubious transactions were only eliminated in respect of the last 3—it was impossible to pursue the enquiry further. The outstanding features are the steady rise in rates and increase in the area of prevalence, maintained, it will be observed, even with a new assessment impending. There can be little doubt that the Rakh Branch statistics foreshadow a very important part for cash rents in the economic history of the Colony.

Areas leased by auction on cash rents for minors.

Statistics of cash rents, Rakh Branch.

Circle.	Year.	Acres rented.	Average rate per acre.*			Year.	Area rented in acres.	Average per acre.*		
			Rs.	A.	P.			Rs.	A.	P.
Jhang Branch, circle II ...	1909-10	834	13	0	8½	1900-01 ...	2,903	6	6	0
" " " III...	1909-10	500	12	3	8½	1901-02 ...	2,218	6	10	0
Gugera Branch, circle I ...	1909-10	1,007	13	4	8½	1902-03 ...	2,730	7	13	0
" " " II...	1910-11	411	16	4	8½	1903-04 ...	4,804	8	14	8
Rakh Branch ...	1907-08	131	11	7	3½	1904-05 ...	6,249	9	9	1
" " 	1909-10	1,629	12	7	3½	1905-06 ...	6,835	11	0	3
" " 	1911-12	4,199	15	8	2½	1906-07 ...	9,235	11	3	1½
Extensions and Proprietary villages.	1909-10	209	8	11	5½	1907-08 ...	12,371	10	8	11½
" " 	1910-11	195	11	9	10½	1908-09 ...	15,509	11	5	11½
" " 	1911-12	277	9	13	7½	1909-10 ...	28,132	10	1	2½+
						1910-11 ...	28,557	13	0	2½+
						1911-12 ...	36,242	14	9	0½+

*To the rents actually received the amount of land revenue, owner's rate, *malikana* and cesses paid by the tenant for the landlord has been added.

†True competition rates.

CHAPTER V.—Fiscal History.

A.—ASSESSMENT OF AGRICULTURAL LAND AND GOVERNMENT WASTE.

138. We learnt in paragraph 3 something of the Bar in its original state.

Pre-Colony assessments.

The assessments over the greater part of this inhospitable region were necessarily of somewhat primitive type. Waste lands were assessed to land revenue by means of a grazing tax, known as *tirni*, a heritage from the Sikh administration. Its object was to make cattle breeders, who did not otherwise contribute to the public exchequer, share in the burden of taxation. *Tirni* assessment differed in each of the districts concerned, Jhang, Montgomery and Gujranwala, and therefore requires a somewhat detailed examination. Cultivation in the Bar itself was confined to the depressions, where the drainage from higher ground collected. This was known as *kasht barani* and assessed to fluctuating rates of land revenue. Towards the beds of the Ravi and Chenab the population was more permanent, centreing round scattered wells or regular riverside villages. For these more formal assessments were devised, which will also require specific notice.

139. In the history of the *tirni* administration in Jhang four stages

Tirni in Jhang.

may be observed: first, unlimited grazing with no record: secondly, unlimited grazing with a record of cattle taxed and fines for trespassers: thirdly, grazing limited to blocks of jungle (the *chak* system) with collections for unregistered (*naubaramad*) cattle by *chakdars*: and finally, grazing limited to *chaks* with collections of *naubaramad tirni* by contractors. The Sikh régime was simply to realize a fixed capitation fee from *sadar tirniguzars*, who farmed the tax and collected it from their adherents. Upon the ensuing changes the power of these *sadar tirniguzars* declined very considerably. Enumeration was first attempted in 1860, with punitive rates for illicit grazing. The *chak* system was introduced in 1874, graziers being assigned to the blocks of jungle by villages or *rahnas*. The *chak* contracts were leased annually, when the old *sadar tirniguzars* usually reappeared as *chakdars*. The last stage was reached in 1884 with the introduction of the Multan system. Separate contracts were given for each *rahna* after careful enumeration; these contracts held good for five years and were usually taken up by *lumbardars*. Foreign cattle were provided for by separate contracts, one of which went to each *chak*: these fell sometimes to the old *sadar tirniguzars*, but more frequently to professional contractors.

140. In Montgomery the changes in *tirni* assessment proceeded on

Tirni in Montgomery.

rather similar lines. Up to the regular settlement only camels, buffaloes, sheep and goats paid the tax. Agricultural cattle were exempt from taxation and so were cows and buffaloes, the property of *bona fide* cultivators. In taxing cows the first Settlement Officer lost sight of the main excellence of the Sikh system: in process of time even agricultural bullocks came to be taxed. Collections were made in the early days through the heads of the grazing community (*sadar tirniguzars*) and village *lumbardars*, who were each allowed 5 per cent. on the takings. In 1872 the *chak* system was introduced. *Chaks* or *tirni mahals* were demarcated and every village of graziers assigned to a *chak*. Such villages were known as *tirniguzar* and the contractors could enumerate their cattle and levy rates accordingly. Trespassers from *ghair tirniguzar mauzas* were liable to treble the ordinary rates. Contractors at first received no assistance in the collection of their dues: but after 1876 the principle of non-intervention seems to have been infringed, with the result that the contractors began to exercise oppression and became obnoxious to the people. The system of *chak* farmers was accordingly abandoned in 1879, and *tirni* collected direct from villages through the agency of *lumbardars* and *tirni zaildars*, who were remunerated by percentages on collections. From 1887, the Multan system, already operative in Jhang, was applied to Montgomery. Each grazing hamlet now contracted for five years to pay a fixed

annual sum. That the tax was a substantial source of revenue is clear from the following statistics of collections :—

					Rs.
1869-70	...	...	...	...	60,445
1886-87	...	...	...	...	1,12,188
1897-98	...	...	...	...	1,41,330

141. Most of the Government waste, which now forms the Colony area in the Gujranwala district, was originally under the Forest department, and by them regularly leased, as a rule to neighbouring villages, for grazing purposes. *Tirni*, however, was not unknown. The system here was to exempt an area for pasture proportionate to the needs of each village and assess the remainder to a nominal sum, one or two annas per acre, on account of the profits from grazing and firewood. For the year 1893 the total assessment on pasture land came to Rs. 32,763 in Hafizabad, which then included the present Khangah Dogran tahsil.

142. Cultivated lands were assessed to land revenue in regular form. For the *chahi* estates in the Kachi and Bar circles of Jhang and Chiniot Mr. Steedman invented his semi-fluctuating *chahwari* system. A fixed assessment was announced for each village and distributed over the wells in cultivation: but liability for payment in the case of each well depended upon the existence of a crop matured with the aid of well water. There were no annual measurements: the assessment merely lapsed, if the well fell into disuse, and was subsequently reimposed on its restoration to service. The *chahwari* system was admirably suited to the rainless uplands and it was employed with slight modifications in the recent re-settlement of the Jhang district by Mr. E. R. Abbott.

143. The Montgomery portion of the Colony formed part of 2 tahsils and 5 assessment circles, as set forth in the margin. For the Bet circles the system of assessment adopted in 1894, on Mr. Fagan's recommendation, was a fixed demand on wells, calculated on a basis of the area of crops which the wells could mature in the year without the aid of river water. Any crops matured in excess of the estimated well areas were liable to a fluctuating assessment at a rate uniform for all crops, but varying in different tracts from Re. 1 to Re. 1-4-0 per acre. Outside well areas three classes of crop rates prevailed: crops were classed as superior, medium or inferior, and the corresponding rates were Re. 1-8-0, Re. 1-2-0 and annas 12. In the Bar circles the assessment was wholly fixed, except for a certain elasticity as regards old wells falling into disuse or new wells coming into service. Similarly there was a fixed assessment for the Deg circle, but crops actually irrigated from the Deg canal were assessed at fluctuating rates. A small fixed assessment was also imposed on waste land in all circles except the Deg.

144. Government waste leased for cultivation from harvest to harvest was assessed at the rate of Re. 1 for each acre of crops matured, with a double charge on land cultivated without permission. The income from these *kasht barani* leases varied with the rainfall, without which surface drainage was impossible.

145. The advent of the Chenab Canal superseded all these arrangements. There was a new assessment on Colony lands, which will now be explained in detail. It was a fluctuating assessment upon matured areas, Government dues being remitted on all failed crops: the demand was in fact adjusted to the outturn of every field in every harvest, for each field was separately assessed. It was a uniform assessment, in that the

Tirni in Gujranwala.

Well assessments in Jhang.

Assessment of cultivated lands in Montgomery.

ASSESSMENT CIRCLES, MONTGOMERY DISTRICT, 1894.

Tahsil.	Circle.
Montgomery	... { Sandal Bar. Bet.
Gugera	... { Sandal Bar. Deg. Bet.

Assessment of *kasht barani*.

Early Colony assessments.

same rates with a few minor exceptions applied to the whole Colony. That aspect of the assessment which concerned itself with remissions on failed crops was known as "unlimited *kharaba*." The history of this system, its defects, the popular discontent excited thereby, and its final abolition, are described in paragraphs 179—184. The assessment proper was composed of five main divisions, each subject to the *kharaba* principle; on the irrigation side—occupier's rate and owner's rate; on the revenue side—land revenue, *malikana* and cesses. The Irrigation department were the assessing agency for all these dues. Elsewhere a consolidated land revenue and occupier's rate, supplemented only by *malikana*, had been found perfectly satisfactory. In the Chenab scheme the component elements were separated and the separation rigidly maintained: it was a system admittedly complex and subsequent years have witnessed many attempts to simplify it. These will be dealt with in the proper place; meanwhile the main heads of the first assessment will be described *seriatim*.

Occupier's rate may be briefly dismissed: it is the charge for water supplied by the Irrigation department and is also known as *abiana* or water-rate. The schedules applicable to the Chenab Colony are shown in Appendix II and their salient features fully described in paragraph 60.

Owner's rate, otherwise *khush-haisiyati* or water-advantage rate, was an irrigation charge, credited to that department. It amounted nominally to Re. 1 per acre assessed, but was remitted for the first 10 years after the date of allotment. In the case of proprietary wells amalgamated with colony estates half owner's rate only was remitted for a period of ten years from the date on which the *mauza* began to be irrigated. Owner's rate was of course only leviable on *nahri* land.

Land revenue was annas 8 per acre on all classes of cultivation for the first 10 years after the date of allotment. Thereafter Government was empowered to raise the land revenue, as might be deemed fit. The Rakh Branch secured a longer date: here the rate of land revenue could not be altered till *kharif* 1912.

Malikana was a fee paid in recognition of the proprietary rights of Government. It was never levied from auction purchasers, and it was remitted with the first payment towards acquisition of proprietary rights in respect of tenants authorized to obtain such rights by purchase. The rates for *malikana* on *nahri* flow land were as follows: for the first 10 years after allotment 4 annas per rupee of land revenue and owner's rate combined, thereafter 6 annas. Owner's rate being regarded for the purpose of calculating *malikana* as due from the outset, actual collections were accordingly for the first 10 years after the date of allotment 6 annas per acre, thereafter 9 annas. *Barani* cultivation, not being liable to owner's rate, paid *malikana* at the rate of 2 annas per acre.

For the purpose of calculating cesses, as in the case of *malikana*, owner's rate was assumed to have been due from the outset. In the first instance cesses were levied at the rate of 4 annas per rupee, or 25 per cent. of land revenue and owner's rate combined. They were sub-divided as follows:—

						Per cent.
Local rate	...	...	...	...	...	12½
<i>Patwar</i> fund	...	...	...	...	...	7½
<i>Jumbardari</i> fee	...	...	...	...	...	5
Total						25

By Punjab Government notifications nos. 87 and 104, dated 2nd April 1906, on the abolition of the *patwar* fund, they were further reduced to—

						Per cent.
Local rate	...	...	...	...	...	10·417
<i>Jumbardari</i> fee	...	...	...	...	...	5
Total						15·417

More simply expressed the local rate now amounted to 20 pies per rupee, while the *lumbardari* cess was 5 per cent. of the land revenue and owner's rate combined. Actual charges per acre from this time were therefore as follows :—

					Rs.	A.	P.
Local rate	0	2 6
<i>Lumbardari</i> fee	0	1 2 $\frac{2}{5}$
Total					...	0	3 8 $\frac{2}{5}$

146. The term "date of allotment" requires some elucidation. On the Rakh Branch owner's rate was imposed separately by estates 10 years after the date on which each estate first received irrigation. The enhanced rate of *malikana*, on the other hand, was imposed by holdings, 10 years after the first free crop in each holding. This required an intricate record of dates for each holding and estate, the inconvenience of which proved intolerable. On the Jhang and Gugera Branches the dates for the enhancement of *malikana*, imposition of owner's rate and permissible revision of the assessment were synchronous for whole sections, these sections being in fact the assessment circles as now constituted. An average date of allotment was assumed for each section, and within 10 years of this date no enhancement or alteration of the revenue charges could take place. The earliest allotment on a section might thus secure a longer respite from increased taxation, but latecomers could in no case claim immunity on the day of reckoning.

147. It was the policy of Government to afford colonists every means of establishing themselves in their new homes, and with this object a proviso appeared in every set of conditions to the effect that the whole demand on account of land revenue, occupier's rate, *malikana* and cesses would be remitted during the first year, and one-half the demand during the second year, after allotment. In the interpretation of this rule the Colony officers enjoyed a certain discretion. For one reason or another the crop immediately following allotment was frequently no crop at all: in such cases the initial remissions dated from the first harvest which could reasonably be designated as such. An accurate estimate was no easy task: but the attainment of the permissible area in crops matured was generally found to be a safe standard. The liberal treatment thus accorded to settlers went far to assure the stability of the new Colony.

148. The proprietary *mauzas* in the Colony area now fell into three categories. Many isolated wells were amalgamated with Colony *mauzas* and assessed in accordance with the principles just described, save that they were exempt from *malikana*. Those situated in Jhang and Gujranwala, which retained an independent existence, were dealt with by the Settlement Officers of those districts and fall outside the scope of this report. Fifty-eight Proprietary *mauzas* were transferred to the Lyallpur district on its formation in 1904 or shortly afterwards and became a part of the Chenab Colony Settlement. These *mauzas* have had a somewhat chequered fiscal history. Mr. Fagan's assessment of the Ravi tahsils in Montgomery expired in 1904-05. It was replaced by a consolidated fluctuating assessment for land revenue and cesses combined, amounting to Re. 1-2-5 $\frac{3}{4}$ per acre, on all classes of cultivation. This was intended only for *mauzas* irrigated partly or wholly from the Lower Chenab Canal. But by an inadvertence it was introduced into *mauzas* wholly outside the irrigation boundary. Sanction was, however, accorded to the change with the proviso that any *mauza* preferring to retain the old system could do so. As the functions of the Canal officers in respect to the assessment of land revenue charges are confined to cultivated lands within the Irrigation boundary, the confusion of systems prevailing in these *mauzas* may be better imagined than described. A careful analysis in 1913 yielded the following summary of the situation :—

	Number of <i>mauzas</i> .
(1) Fluctating land revenue assessed wholly by the Irrigation department	10
(2) Fluctuating land revenue assessed partly by Revenue officers and partly by the Irrigation department	24

	<i>Number of mauzas.</i>
(3) Fluctuating land revenue assessed wholly by Revenue officers ...	8
(4) Fluctuating land revenue assessed by Revenue officers and fixed assessment ...	5
(5) Fixed assessment only ...	11

It was not till their re-assessment in *kharif* 1914 that these *mauzas* returned to a normal state as regards land revenue charges.

B.—LAND REVENUE IN TOWNS.

149. Town sites sold by Government in the Chenab Colony have been liable to the payment of land revenue since 1895, under the authority of Government of India resolution, Revenue and Agricultural department, no. 21—223-12, dated 7th October 1895. Prior to this, in the first two foundations, Shahkot and Dijkot, now relegated to the status of villages, sites were sold free of rent and land revenue in pursuance of the provincial practice, which exempted village and town sites from assessment. The urban areas now liable to land revenue in the Colony are as follows:—Lyallpur, Sangla, Gojra, Jhumra, Toba Tek Singh, Samundri, Jaranwala and Tandlianwala. The rates levied under the resolution of 1895 are, however, applicable only to building sites: agricultural land, even within urban areas, is governed by the ordinary rules of assessment set forth in Chapter VI and more particularly paragraphs 173 and 174 of that chapter. The unwonted presence of land revenue in these towns is apt to cause confusion between rent and revenue, for which reason the following definition of the powers and duties of local bodies with reference to these two charges is desirable:—

- (a) Land revenue is a Government charge due to Government on all sites sold, and its payment is a condition of such sale. No sale outright or permanent alienation of Government land can take place without a reference to Government, and sites not permanently alienated are not assessable to land revenue. The rates of land revenue are fixed by Government, and local bodies have no power to vary them. Deputy Commissioners alone are responsible for its collection.
- (b) The custody of Government land in Colony towns vests in Municipal and Notified Area Committees. They are at liberty to lease sites and appropriate the rent, *e. g.* shops, quarters for menials or *gualas*, places for noxious trades, brickfields. The amount of rent is a matter for the discretion of the local body and sites so rented are not liable to land revenue.

150. The urban areas liable to land revenue in the Colony town were classified under three heads:—

Rates of land revenue in urban areas.

- (i) Intra-mural sites.
- (ii) Extra-mural sites, factories.
- (iii) Extra-mural sites, bungalows.

The assessment on intra-mural sites was fixed at 5 per cent. of the purchase money, subject to a maximum of Re. 1-8-0 per *marla*. Factory sites sold prior to March 10th 1901, were assessed at Rs. 3 per acre: for those purchased subsequently to that date the rate was Rs. 20 per acre. Bungalows were originally assessed at Rs. 3 per acre, but from 11th June 1901 (Financial Commissioner's letter no. 3592 of that date) the rate was raised to Rs. 10 per acre. Government sites have always been exempt from land revenue.

151. In the case of intra-mural sites the land revenue originally included cesses, $\frac{1}{5}$ th of the demand being credited under this head: from 1906 13 per cent. was substituted for $\frac{1}{5}$ th, the method of assessment being otherwise the same. Lyallpur received special treatment: here 15 per cent. of the demand was credited to cesses. Bungalows and factories are similarly circumstanced in this respect, cesses being charged at the rate of $15\frac{5}{8}$ per cent. in addition to land revenue. It is not at present proposed to revise these rates independently of the land revenue assessment.

152. Intra-mural sites were sold subject to the condition that the rates of land revenue be revised at the expiry of the next general assessment or after 30 years (Financial Commissioner's letter no. 2407, dated 1st April 1896). In the case of bungalows the assessment at Rs. 3 per acre is due for revision at the next general assessment of the district: those assessed at Rs. 10 are liable for a term of 10 years from the allotment of each site. The Financial Commissioners having decided, in their no. 145 S., dated 11th June 1914, that the present piecemeal assessment of the Colony, which was completed in 1914, cannot be regarded as a general reassessment, it follows that intra-mural sites and bungalows are not yet ripe for reassessment. The Tandlianwala sites are an exception: they were sold under the authority of the Financial Commissioner's letter no. 506 S., dated 16th September 1910, and a reassessment may be made at any time: but in the case of Tandlianwala also the Financial Commissioners decided in their no. 145 S., dated 11th June 1914, that separate action was not necessary. The treatment of factories was analogous and in effect the same: in the deeds of sale it is provided that the rates of land revenue are fixed for the terms of the current and next general assessment of the district, or for a period of 30 years, whichever is less.

C.—GROUND RENT.

153. It is necessary at this stage to mention the assessment to ground rent (*karaya teh zamini*) of residential sites in the Colony towns and villages, because, though now abolished, it is not easily distinguished from the land revenue charges just described. Its object was to secure a return to Government from the vagrant hordes, who ministered to the needs of the agricultural classes, shopkeepers, dealers, brokers, menials, artisans and the like—the flotsam and jetsam of the Colony population. The right of Government to tax persons, who exploited the prosperity of the newly settled tracts for their private advantage, will hardly be disputed. Without some organized scheme of allotment, moreover, these persons would have swarmed promiscuously round every *abadi*, reproducing the squalour and congestion of the old homes, which it was the ambition of the Colony officers to avoid. Ground rent was accordingly levied in fee of the right to occupy a definite assigned residential area. It was treated as land revenue and rules were framed for its collection under the authority of section 59 (1) (c) of the Land Revenue Act. Rupee 1 per harvest for 4 *marlas* was the rent fixed in the case of the shopkeepers and 4 annas for other residents. Grantees of land and their relatives, as also menials not cultivating otherwise than in the *kamins'* square, were exempted, among others, from the tax: actual manufacturers of goods sold were classed as "other residents" and so obtained the benefit of the lower schedule. The assessment was made by the field staff and checked by *muharrirs* at tahsil headquarters: collections were in the hands of *lumbardars*, who received the usual *pachotra* for their services. In the towns *karaya* was only charged on sites leased to menials, not those sold outright for shops, factories or dwellings. The proceeds of the tax were credited to Government.

154. There was much to approve, much also to criticize, in the levy of ground rent. Illicit squatting and the subsequent acquisition of prescriptive rights in the ground occupied was thereby prevented: encroachments were brought to light and promptly dealt with. But in its operation the system was onerous in the extreme. It conflicted with the established customs of rural India: it necessitated vexatious interference with the internal affairs of the village community: it gave full play to the petty tyranny of the *patwari*: it threw a heavy burden upon the district administration without commensurate returns: it undoubtedly impeded the flow of labour to the newly colonized areas and the free settlement of the menial classes, whereby the high cost of living, so potent an evil in the early days, would normally have been reduced. In effect, its continuance was eventually admitted on all sides to be neither politic nor desirable.

155. The Colonies Committee, who considered the question of ground rent exhaustively, were for its abolition, finding the disadvantages of the system out of proportion to the benefits conferred and the friction it excited sufficient justification for the pecuniary sacrifice involved in the course they recommended. The Government of India confirmed this view and *karaya* is now no longer levied. According to present arrangements in the villages shopkeepers, tenants, artisans and menials are not permitted to acquire proprietary rights in the residential areas they occupy and remain the tenants-at-will of Government. Their occupancy is subject to the management of the *lunbardars*, who may charge rent according to the *karaya* rates heretofore prevailing or other scale, or remit it altogether, or for rent substitute a cess under section 35 of the Colony Act. The income both from rent and cess is to be paid into the common village fund. Procedure in the towns is analogous. Government no longer realizes ground rent for itself but local bodies, as set forth in paragraph 149, are authorized to lease Government lands, of which they are the custodians, for the benefit of the Municipal or Notified Area Fund.

CHAPTER VI.—The re-assessment of Agricultural Land.

A.—INTRODUCTORY.

156. Upon the main issue—the method of assessment the orders of Government followed the recommendations of the Colonies Committee. In many ways the situation obtaining in the Colony suggested a fixed assessment: there was a permanent water-supply subject to definite and not very violent fluctuations: internal distribution was efficient and cultivators highly trained in the business of irrigation, from which they derived their sole means of subsistence. But the absence of any guarantee on the part of the Irrigation department to supply the quantity of water required, and the want of a module which would record supplies upon a volumetric basis, constituted an insuperable objection to the introduction of fixed assessments, save in limited areas. Therefore, though the idea of fixed assessments as a practical measure was not wholly abandoned, the fluctuating system was for the present retained—purged, however, of its most objectionable features. Thus holding-to-holding *kharaba*, alike for *zamindars* and officials a positive inducement to corruption, was abolished altogether on *nahri* cultivation except in a few special cases, and in the assessment itself every qualifying circumstance received the fullest possible consideration. Differential treatment, both as regards land revenue and water-rates, was the key-note of the system now launched upon the Colony. That it secured to Government, albeit after a more elaborate and vexatious inquisition, larger returns than would have resulted from fixed assessments, was of course in its favour. But its undoubted popularity with the agricultural classes is at once its best feature and its crowning justification: and, strangely enough, the approval of the cultivator in the fields was based upon a misconception of the nature and principles of revenue policy. For what constituted its chief attraction in his eyes was the knowledge that no revenue was leviable where no crop had seen the light, that he could speculate upon seasonal variations and turn them to his own advantage: whereas no such elasticity had as a rule characterized the fixed assessments, to which he had been accustomed in the old home.

157. The main principles of the new assessment, as set forth in this chapter, may be briefly summarized as follows:—

- (1) Retention of the fluctuating system for land revenue, *malikana* and cesses, as well as occupier's rate.
- (2) Differentiation of *nahri* (flow and lift) land revenue charges by assessment circles, by villages and by individual squares, in consideration of soil conditions, capacity of cultivators, and other factors which usually affect such assessments.
- (3) Adoption of acreage rates, not differentiated as in the case of *nahri* land, for other classes of cultivation.
- (4) Abolition of owner's rate.

- (5) Remission of the assessment, wholly or partially, for failure due to causes beyond the control of the cultivator or the Irrigation department. Abolition of holding-to-holding *kharaba* in the case of *nahri* crops, except where the supply of water from the canal is still unsatisfactory.
- (6) Retention of the Irrigation department as the assessing agency, both for irrigation and land revenue charges, within the irrigation boundary and of the revenue staff outside the irrigation boundary.
- (7) Provision for the subsequent introduction of fixed assessments.

B.—CLASSES OF CULTIVATION.

158. The first colony assessment was marked by its uniformity. The nominal 8 annas rate was imposed without regard to soil conditions or the means of cultivation. With an enhanced demand this uniformity could no longer be maintained. Cultivation was therefore classified under six heads and assessed at fluctuating rates adjusted to the circumstances of each class. For *nahri* cultivation, as composing the bulk of the colony, produce estimates were prepared as usual and appropriate rates deduced. The assessment of *nahri* land is described at length in another part of this chapter. *Chahi*, *barani*, *sailab* and *abi* were arbitrarily assessed, the areas so classed being comparatively insignificant: cultivation falling under these heads is briefly discussed in the following paragraphs. The rates imposed and average areas annually matured in each class are tabulated below:—

Classes of Cultivation and Revenue Rates.

Class.	Fluctuating revenue rate per acre.	Average area annually matured in acres.
<i>Nahri</i> (flow)	Annas 12 to Rs. 10*	1,746,576
<i>Nahri</i> (lift)	Half flow rates*	10,653
<i>Chahi</i>	Re. 1-4-0†	3,092
<i>Barani</i>	Annas 12†	21,410
<i>Sailab</i>	Re. 1†	4,091
<i>Abi</i>	Annas 12†	508

* Per acre sown, except where holding-to-holding *kharaba* survives.

† Per acre matured.

159. *Chahi* occurs mainly on the fringes of the colony area. Elsewhere the depth of water-level precludes the construction of wells for the purpose of cultivation. In the Proprietary mauzas *chahi* was the principal means of cultivation; it was for this reason that the permissible limit of canal irrigation was fixed at 50 per cent. of the *mauza* area. The best well cultivation is probably superior to *nahri*. The area immediately round the well cylinder receives the bulk of the manure. Cultivation is generally *dofasli*, wheat on maize, *methra* on cotton etc.—the rotation of crops is very irregular. The unmanured portion of the well estate is renovated by fallows. In a tract where scanty rainfall and excessive heat render well irrigation in the summer months especially arduous, *rabi* crops naturally occupy by far the larger portion of the well-irrigated area. Wheat, carrots and turnips accordingly take the first place, while the principal *chahi* staples in *kharif* are *jowar* and cotton. There was a slump in well irrigation at the advent of the Chenab Canal: *nahri* cultivation was easier and tenants deserted to the new allotments, where the settlers offered them favourable terms. The fortunes of the Proprietary mauzas, never of much consequence, fell to a low ebb and only revived with the extension of canal irrigation to their own lands. Latterly there has been a distinct movement along the Ravi to supplement canal irrigation, especially when supply is short, by the erection of new wells or the repair of old ones, and care has been taken to allow the full benefit of all the concessions provided by Government as rewards for enterprise of this kind (Settlement Manual, para-

graphs 505—508). The new *chahi* rate of land revenue, Re. 1-4-0 per acre, is admittedly low, because it was the intention of Government to encourage well irrigation by a light assessment.

160. The same is true of the *barani* rate (12 annas). Profits on this class of cultivation are much lower and more precarious : probably one-fifth of the area sown fails, on the average, to produce a crop. However with an increased rainfall the *barani* area is rapidly expanding : on the Rakh Branch, where the annual rainfall amounts to as much as 15·44 inches per annum, it attains an average of 7,283 acres. Towards Jhang *barani* cultivation might with greater propriety be described as surface drainage cultivation. There is little or none, not situated in a depression. The chief *barani* crops are *bajra*, wheat, gram, *til*, *moth*, *jowar* and *mung*. No rotation is practised : ploughing is liberal, but manure not applied at all.

161. *Sailab* cultivation occurs along the Deg and Ravi only, where the river floods, on receding, leave large expanses, which retain moisture long enough to produce a crop. The Ravi water becomes available in one of three ways—(i) by pouring down creeks on an old river bed (*budh*), over the shelving banks of which it spills and floods the adjacent low lying alluvial land : (ii) by being headed up against a bank at a sharp bend, when the flood water will sometimes overtop the bank and inundate the neighbouring lands, such a flood being locally known as a *dhak* or *chal* : (iii) by *chhars* or artificial channels, which generally have their heads on creeks or old river beds. This form of cultivation is nearly all *rabi* and the principal crops are wheat and gram : on the Deg, however, where soil is hard and impermeable, rice is largely grown in the *kharif* season. Re. 1-0-0 was the rate fixed for *sailab* cultivation.

162. Cultivation watered by lift direct from the river and Deg *nala* or from creeks and pools in the vicinity is classed as *abi*. It is by no means extensive. The process is costly, as the water may lie 15–20 feet below the surface in the cold weather : there is much uncertainty in it : the quantity of water in the channel or depression is variable : the *jhallars* are, moreover, often injured by flood water and the necessity for repairing them adds to the cost of production. *Abi* cultivation is mainly practised in *kharif*, when the supply of water is abundant : rice and *jowar* are the principle staples grown, in *rabi* wheat and turnips. It is assessed at 12 annas per acre.

C.—ASSESSMENT OF *nahri* CULTIVATION.

163. The physical contours of the colony area were exceptionally favourable to canal irrigation. The vast alluvial plain, of which it consisted, had a fall of some 181 feet from north-east to south-west, though level to the naked eye. Its central portion formed a sort of watershed, whence the ground sloped gently to the river beds which bounded it on either side. The limits of the upland country were marked by high banks, known as *dhayas*, sometimes abrupt and conspicuous, sometimes ill-defined and evanescent. These *dhayas* do not preserve a uniform distance from the river. The Ravi *dhaya* begins to be most pronounced at Bahlak, where it joins the river ; thereafter it pursues a devious course, till at Mohlan, where it passes out of the Colony area, it is no less than 21 miles away. Another *dhaya* actually invades the Colony opposite Chiniot and for a distance of over 50 miles forms a serious obstacle to the peaceful penetration of the Chenab riverain by the Jhang Branch distributaries. The presence of the *Budh nala* is an added complication. This is an old bed of the Chenab, which first becomes prominent near Pindi Bhattian. Between Amipur and Jaura the Bhowana Branch crosses it in an aqueduct. Lower down it serves the purpose of a canal escape and drainage area, until at length it vanishes altogether.

There is, with these exceptions, little to interrupt the steady flow of water from the Chenab Canal over the length and breadth of the country. High land generally goes to form the *charagah* : otherwise if it is allotted and the quality of the soil justifies the experiment, *jhallars* are set up and worked with success.

There is a fine *jhallari* tract near Buchiana, which includes the estates of Rai Bahadur Ganga Ram and Munshi Sirdar Ahmad. But as a rule cultivation is confined to lands irrigable by flow. The size of the area matured with the aid of canal water was largely determined by geographical conditions; but there were other factors hardly less significant. To nearly all the area commanded by the canal Government possessed an undisputed title: the absence of private rights in land ensured to the Irrigation department unprecedented freedom in the development of their project, while the square system facilitated the distribution of water in a manner never before contemplated. As for the *zamindar*, he needed little incentive to avail himself of the new sources of supply. The depth of the underground water-table generally precludes well cultivation; the scanty rainfall affords little hope of a crop without artificial irrigation, while the soil, light, loose and porous, lends itself, as no other, to a system of irrigation by canals. The actual supply of water, though dependent on the river and the discretion of the distributing officers, is available for the colonist to manipulate as he pleases. He can spread it over a large area and count on the uncertain rainfall to assist it to maturity, or concentrate upon a smaller plot and assure himself of reduced, but less precarious, returns.

164. The extent and importance of the *nahri* cultivation, estimated at an annual average of 1,746,576 acres matured by flow, was such as to demand the utmost circumspection in regard to its assessment, and the full apparatus of settlement procedure was accordingly called into operation. For every circle except the last a produce estimate was prepared with the usual schedules of prices and outturns, and revenue rates were evolved after due consideration of the circumstances relevant to the situation. The rates were differentiated by circles, villages and squares, separate tables of rates being fixed for each circle. They were imposed on sown areas for the most part and in special cases on areas matured. Lift and flow irrigation were distinguished by a broad difference in principle. These are the bare outlines of a process, which will now be described in detail.

165. Colony rents were discussed at some length in paragraphs 134 to 137. They present, as was there observed, no little variety. In the evolution of the half assets rate, however, the prevailing rent in kind need alone be considered. This is known as half *batai*, landlord and tenant paying all Government charges in equal shares. The method of calculation was originally laid down by Sir James Wilson in paragraph 17 of his review of Mr. de Montmorency's first assessment report on Jhang Branch circle I, and followed in all subsequent reports. The average *nahri* area matured by flow during the previous five years was usually taken as the basis of the estimate. The prices and outturns assumed were then applied. The resulting total was modified by certain deductions, for instance one half the value of turnips and a fixed percentage for *kamins'* dues. This and other fodder deductions were as a rule necessitated by local conditions. In Jangli *manzas* the turnips have largely disappeared before *batai* takes place; other fodder crops habitually suffer from the depredations of tenants and the landlord seldom secures a full share. Nor is this all. The landlord is entitled to one half of the gross produce, reduced, for the reasons just enumerated, by an amount equal to one-tenth of his share of *jowar*, straw, *senji*, *mainan* and *chari*. But half the occupier's rate must also be deducted from the landlord's share, for this proportion of the occupier's rate, actually paid by the landlord, should in theory be paid by the tenant. Similarly it was the custom for the tenant to pay half the owner's rate, *malikana* and cesses for the landlord; so these payments had to be added to the landlord's share. By this process the landlord's true profits were elicited, and half of them, divided by the area on which the estimate was based, gave a half assets rate per acre.

166. In the table opposite the rates of yield are shown by circles, omitting the Extensions and Proprietary villages, for which no valuation was prepared. The figures represent maunds per acre for the most part; less important crops are, however, in some cases valued by means of an acreage rate in rupees,

Statement showing outturns assumed per acre.

Harvest.	Crop.	Jhang Branch, circle I.	Jhang Branch, circle II.	Jhang Branch, circle III.	Gugera Branch, circle I.	Gugera Branch, circle II.	Rakh Branch.
Kharif.	Rice, maunds	20	20	20	20	20	20
	Bajra, maunds	7	7½	7	7	7	7
	Jowar, maunds	6	6½	5½	7	7	7
	Maize, maunds	10	9	7½	9	11	13
	Sugar, maunds	14	14	12	16	14	18
	Til, maunds	2	2	2	2	2	3
	Cotton, maunds	4	4	4	4	4	4
	Vegetables, spices, condiments, garden produce, chillies, melons, Rs.	20	20	20	20	20	25
	Indigo, Rs.	20	20	20	20	20	25
	San, sankukra, Rs.	20	20	20	20	20	15
	China, kangni, maunds...	4	4	4	4	4	} Rs. 10
	Others, Rs.	8	8	8	8	8	
	Fodder { Chari, gawara, lucerne, Rs.	8	8	8	8	8	12
	{ Sanwak, mung, moth, mash, ravan, Rs.	8	8	8	8	8	10
	Jowar straw, Rs.	3	3	3	3	4	4
Rabi.	Wheat, maunds	10½	9½	8½	12	11	13
	Barley, maunds	10½	9½	9	12	11	13
	Gram, maunds	8	8	8	8	8	9
	Massar, maunds	8	7	7	7	8	8
	Toria, maunds	5	5	5	6	6	7½
	Garden produce, vegetables, melons, Rs.	20	20	20	20	20	25
	Tobacco, Rs.	25	25	25	25	25	40
	Senji, mainan, Rs.	15	15	15	15	12	} 15
	Methra, Rs.	12	12	12	12	12	
	Turnips, Rs.	8	4	4	4	8	} 12
	Jawi, sarshaf, taramira, lucerne, Rs.	8	8	8	8	8	
	China, kangni, maunds...	4	4	4	4	4	} Ra. 10
	Alsi, maunds	4	4	4	4	4	
	Others, Rs.	8	8	8	8	8	} 5
	Wheat and barley straw, Rs.	2	2	2	2	3	
	Gram straw, Rs.	0-12-0	0-12-0	0-12-0	0-12-0	1	1-8-0

price and outturn being amalgamated for the sake of convenience. So far as the first five circles are concerned, little comment is necessary: the ratio fairly represents the relative fertility of those circles as compared with each other. The Rakh Branch statistics indicate at first sight a more stringent valuation, particularly in respect of wheat, sugar, and *toria*. Any increase in the rates of yield for these important commodities must needs affect the produce estimate very considerably. In order to show how fully the high rates of yield for the Rakh Branch were justified by actual conditions, the results of certain crop experiments in this and the other circles are placed side by side in the margin. Now crop experiments may not be conclusive evidence, but they

AVERAGE OUTTURN PER ACRE BY CROP EXPERIMENTS.

Circle.		Sugar- cane.	Toria.	Wheat.
		Mds.	Mds.	Mds.
Jhang Branch, circle, I	...	14.9	7.4	11.0
Jhang Branch, circle, II	...	15.6	6.3	9.6
Jhang Branch, circle, III	...	14.48	6.13	9.2
Gugera Branch circle, I	...	20.18	8.0	12.7
Gugera Branch, circle, II	...	14.07	6.52	10.95
Rakh Branch...	...	18.2	8.1	13.7

constitute an independent test, which cannot be ignored altogether. The figures leave little doubt that the Rakh Branch really has the advantage of its neighbours in capacity for crop production. This is not the place for a lengthy disquisition on the causes of the phenomenon; they will be found in its central position, with every modern appliance for economizing labour and increasing fertility available close at hand, the high class of its cultivators nurtured in the best agricultural traditions of the province, its fine irrigation system, perfected by over 20 years of forethought and elaboration, its wealth in livestock and abundant population. Few of these attributes as yet belong to the newer circles, or prevail there to the same extent as on the Rakh Branch: Gugera Branch circle I, a fine tract, where the results of the experiments on sugarcane and *toria* would have justified the adoption of higher rates of yield, is penalized by its more recent colonization and less stable conditions as regards water and population; in the case of the Rakh Branch there was nothing to prevent the closest adherence to the statistics of crop experiments and no further excuse should be required for the higher schedule finally approved.

Market prices and prices sanctioned.

Name of commodity.				SCHEDULES OF PRICES SANCTIONED BY THE FINANCIAL COMMISSIONERS.				Average market price at Lyallpur (3 years, 1910-12).
				Average market price at Lyallpur (11 years, 1898-99).	1910 Jhang Branch I, II, III and Gugera Branch I.	1911 Gugera Branch II.	1912 Rakh Branch.	
				As. per md.	As. per md.	As. per md.	As. per md.	As. per md.
Wheat	...	...	...	44	34	36	40	49
Barley	...	...	...	31	22	22	24	35
Gram	...	...	...	39	28	28	28	35
Cotton	...	...	...	84	74	80	96	137
Jowar	...	...	...	33	24	26	28	44
Bajra	...	...	...	36	28	28	30	39
Maize	...	...	...	30	22	24	25	30
Gur	...	...	...	66	57	57	64	76
Toria	...	...	...	64	50	52	57	74

167. Prices were based on *mandi* returns, not as usual on grain-dealers' books. This procedure was dictated by the favourable situation of the tract as regards market towns, where the bulk of the produce changes hands. The

trade through shopkeepers is an uncertain guide: the shopkeepers change too frequently, being often merely the agent (*gumashta*) of a *mandi* dealer, and the villages themselves are of comparatively recent date. No consecutive data could be obtained approaching the *mandi* returns for accuracy. The difference between farmers' and *mandi* prices was estimated at from 5 to 10 per cent. Allowance had also to be made for the fact, to quote Mr. Noel Paton in the Indian Trade Journal of June 17th 1909, that "it is proved in Lyallpur on a cycle of years that wheat prices are lowest at harvest time and rise continuously thereafter up to January and February." And this is true of *toria* as well as wheat. Large grantees and Sikh peasants within easy reach of the markets hold up stocks for a rise and profit by changes in the market; but the bulk of the colonists sell within three months of threshing. Only substantial landowners can command efficient storage or enjoy freedom from the domestic exigencies, which compel immediate sale. Prices were first fixed in 1906. They were revised in 1910 and the new schedule was applied in the three Jhang Branch circles and in Gugera Branch circle I. The inadequacy of these figures was criticized and in the meantime prices were expanding. The situation of the Colony certainly justifies high estimates: competition is keen among the European merchants resident at Lyallpur, and famine in the Province redounds only to the advantage of the Chenab colonists, who secure good crops even in years of scarcity elsewhere. A fresh schedule was consequently approved for Gugera Branch circle II, and yet another for the Rakh Branch. That these schedules were fully justified by the trend of the *mandi* prices appears from the above table, in which they are compared with average prices in the Lyallpur market for selected years. The principal staples only are quoted in this table, but details for every commodity are shown in the assessment reports. Fodder crops and straw in particular received an enhanced value in the latest assessments. In recent years of scarcity there has been a busy export trade in *bhusa*, stimulated by concession rates on the railway. The fodder crops were estimated with due regard also to the profits from stock breeding, for which sufficient allowance was not made in the first reports.

168. The menial castes, without whom the work of colonization must

Kamins' dues.

have been seriously hampered, were encouraged to settle by the allotment, in every peasant *mauza*, of a menials' square, to be annually distributed by *lumbardars* in small plots to the recognized village servants for cultivation. The menials' square was a valuable supplement to the customary remuneration in kind from the common heap, of which details appear in the

Menials receiving payments in kind for agricultural services.

Class.	Nature of service.
<i>Lohar</i> ...	Manufacture and repair of iron implements of agriculture.
<i>Tarkhan</i> ...	Manufacture and repair of wooden implements of agriculture.
<i>Chuhra, chamar</i>	Carting manure, winnowing, repair of walls, rough field work.
<i>Kumhar</i> ...	Carriage of grain; supply of earthen vessels, especially for <i>jhallars</i> .
<i>Machhi, jhinwar</i>	Supply of food and water to labourers in the field, messenger.

Certain services, also rewarded by payments in kind, belong to no class in particular, such as: (1) winnowing (*udhai*), for which wandering *changars* are mostly employed; (2) weighing (*dharwai*), generally the special function of the village shopkeeper; (3) reaping, the *lawas* may be drawn from almost any class; (4) cotton-picking (*chunas*), in which women and children participate as well as menials of all kinds; (5) sugar refining—the *jhoka* maintains the furnace necessary to this process.

of their produce otherwise than to the local Khatri. Hence it happens that Janglis, by nature openhanded and lacking in business acumen, are often mulcted in the whole *gamut* of charges. The Jats and Arains from the central

margin. This statement of functional distribution is necessarily somewhat vague. Every tribe, every district has a different tradition and the scale of payment fluctuates so widely that no estimate can be attempted: it must be remembered too that the dues often reward services of a domestic as well as an agricultural nature, thus the *tarkhan* supplies all household furniture, the *chuhras* keep the compound clean, the *kumhar* is the village grave-digger. Some causes of this diversity in custom may be briefly indicated. Janglis are heavily taxed because their menials, attached to them from time immemorial, have multiplied in the new era of prosperity; also, being largely without carts, Janglis still rely on the potter's donkey for transport when they wish to dispose

Punjab are more prudent, and sometimes cut their payments very fine, for instance by dispensing with the dues for winnowing, weighing, cartage of gram and manuring. *Nazarana* grantees, again, have some difficulty in obtaining their proper complement of menials, and the problem is intensified, when each grantee resides in a separate hamlet, as they often do; this and the absence of *kamins'* squares in their *mauzas* tend to increase the scale of charges for them.

The percentages deducted in each circle from the produce estimate on account of *kamins'* dues are shown in the annexed table: they were determined with careful regard to the tribal composition of the circles and the prevailing custom in this connection. Nevertheless Sir Michael Fenton, in his review of the Rakh Branch assessment (paragraph 7), considered it very doubtful whether *kamins* really enjoyed as much as 10 per cent. of the produce. It is a nice question, how far the beneficiaries from the common heap really share in the cost of production and how far they are remunerated for personal and religious services properly speaking outside the account. The *nai* (barber and marriage broker), *mian masjid* or *dharmsalia* cannot by a stretch of the imagination be said to serve the ends of agriculture, though generally paid by a share of the produce. Suffice it to say that the deductions probably erred on the side of liberality, and the fact increases the margin of caution with which the assessing officers framed their estimates.

KAMINS' DUES.

Circle.	Percentage deducted.
Jhang Branch, circle I ...	12
" " " II ...	13
" " " III ...	13
Gugera Branch, circle I ...	10
" " " II ...	12
Rakh Branch ...	10

169. With the recent rise in prices the value of these payments in kind to menials has materially appreciated, so that their position is now one of very substantial prosperity. Even outcast *chuhars* and *chamars* are frequently owners of several head of cattle, not to mention their partiality for the lesser orders of livestock. In the occasional unrest which disturbs village society, they easily hold their own by the familiar devices of boycott and combination. From time to time there has been talk of economic revolution in the Colony, of reductions in the ranks of *kamins* through plague, of a rise in the price of daily labour, or the rival attractions of some other rapidly developing agricultural tract. There need be little anxiety now that labour will be tempted from its present allegiance. Most of the Colony *mauzas* are no longer infant communities, but well-grown organizations where economic conditions have attained a certain fixity. Jangli dependants are not likely to leave the communities, to which they are united by ties as ancient as they are intimate, while immigrant grantees are at pains to secure a similar permanence in their relations with the menial classes by careful management of the *kamins'* square and minor conciliatory measures. Moreover, the rapid increase in population will probably relax any stringency, which may appear to be impending.

Half net assets and revenue rates.

1	2	3	4	5
Circle.	Half assets rate per acre.	Sanctioned revenue rate per acre.	Final revenue rate per acre.	Percentage of 4 to 2.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	
Jhang Branch, circle I ...	3 10 0	3 1 10	3 1 7	85
Jhang Branch, circle II ...	3 1 3	2 9 9	2 9 7	84
Jhang Branch, circle III ...	2 14 6	2 7 0	2 5 1	80
Gugera Branch, circle I ...	4 2 7	3 4 10	3 5 0	80
Gugera Branch, circle II ...	4 3 8	3 8 1	3 7 10	82
Rakh Branch ...	6 0 8	4 12 0	4 9 0	74
Extensions ...	...	3 0 0	3 0 7	...
Proprietary villages ...	...	3 0 0	2 9 3	...

170. In this table the half net assets, deduced by the method described in paragraph 165, are shown together with the revenue rates as sanctioned and announced. The pitch of the rates, as applied in each circle, will be considered in a later chapter; all that is here intended is to present in comparative form the difference between the final rates and the half assets estimate. These statistics leave little doubt as to the moderation of the assessment, which nowhere exceeds 85 per cent of the legitimate demand. For the Rakh Branch the percentage is as low as 74—it was not the intention of Government to take undue advantage of the high produce estimate necessitated by the special circumstances of the Rakh Branch. A difference will also be observed between the sanctioned and final rates. A certain latitude is permitted to an assessing officer in the distribution of the revenue rate: indeed, it is inevitable for slight discrepancies to occur. In two cases only does this point require further comment; elsewhere it is negligible. In the Rakh Branch circle the final rate fell short of the sanctioned rate by 3 annas: there were extensive reductions on appeal and the difference here was deliberate rather than accidental. In the other instance the divergence from the sanctioned rate was similarly due to a special reason. For the Extensions and Proprietary villages a revenue rate was fixed arbitrarily, after due consideration of the conditions obtaining in these and other circles in the vicinity. The Extension and Proprietary villages do not differ materially as regards capacity to pay land revenue, but they are subject to different schedules of occupier's rates (*vide* Appendix II and paragraph 60), an arrangement which leaves the Proprietary villages at a disadvantage to the extent of 8 annas per acre. That was a distinction, which could not be ignored by the assessing officer, and the reduction in the final revenue on Proprietary villages was designed to counteract the effect of the higher schedule.

171. The principle of differentiation was a legacy from the Colonies Committee, who framed their recommendation in the following words:—
 “Land revenue should be differentiated for assessment circles, for villages, and for holdings, in respect of soil capacities, the agricultural qualifications of the cultivators, and any other factors which usually affect land revenue assessment.” That finding was a natural and inevitable corollary to the theory that the Government demand was to be adjusted to the outturn of every field in every harvest. In the application of the principle soil capacity was the chief criterion. Against Colony soil as a whole little can be said. Yet the most promising expanses of country are often marred by blocks or patches of inferior land—sandy, saline or what not. Such soil could not with any show of reason be assessed at the same rates as the best pieces. Conversely, there are few villages where the assessment could not be legitimately increased for the squares abutting on the *abadi* site upon the sole ground of their enrichment through manure. So sharp is the transition from good to bad that even single *mauzas* could seldom be uniformly assessed without disregarding fundamental soil distinctions. Other considerations presently began to be discussed: there were wide differences between cultivators as regards agricultural performance, for instance between the Janglis, prodigal and careless, strangers to any but the most elementary forms of husbandry, and the best immigrants from the central Punjab with their tireless industry, thrifty habits and admirable traditions as tillers of the soil: and apart from individual idiosyncrasies there was the fact of chronic absence or regular residence, of personal or vicarious cultivation, remoteness or proximity of markets, excess or defect in rainfall: holdings again vary in size from a few *killas* to a whole village. These differences were often illustrated by the cash rents, which might exhibit the sharpest contrasts within the limits of a single *mauza*. Upon one point, however, it was not permissible to differentiate. In this connection, paradoxical as it may seem, deficiency or abundance in water-supply is not a vital issue. The Irrigation department in theory guarantee no water at all: in practice their aim is to supply to each holding enough to mature 75 per cent. of its area. Supplies in excess of this are reduced: if deficient, they are augmented up to the permissible limit. It would be incorrect to say that the question of water was wholly ignored,

especially as regards tail *mauzas*: a *nahri* assessment could hardly be carried out on such lines. But the assessment generally assumed that each *mauza* was provided with an adequate supply of canal water, as is actually the case. The appointed remedy for *mauzas* short of their scheduled supply was the retention of *kharaba*, not a reduction in land revenue—but this is a question to be considered by itself hereafter.

172. In the end the square was taken as the unit of assessment (any area smaller than this would have been an impossible refinement) and the principle of differentiation received the fullest play. The work of differentiation proved the heaviest item in the task of the assessing officers: yet, despite the labour involved, the differential system is one of the most satisfactory features of the settlement. Reduced rates on inferior land eased the burden of an imposition, which might otherwise have proved too onerous; at the same time, the best squares being also distinguished, Government has been enabled to take a fuller demand than would be possible by the application of more uniform rates. In many instances *zamins* were invited to propose their own scheme of differentiation and mutual jealousies have generally helped to produce very accurate returns. The introduction of the differential system increased the range of appeal from the *mauza* to the square—consequently the volume of appellate work in connection with this settlement has probably passed all previous records; but that is no index to its popularity, which stands unchallenged, or the accuracy of the assessment, which, owing not a little to this salutary measure, in the long run probably left no single settler with a reasonable ground of complaint.

Classes of Land Revenue on nahri flow cultivation by Assessment Circles.

Class.	Jhang Branch circle I.	Jhang Branch circle II.	Jhang Branch circle III, Bhangu Extension.	Gugera Branch, circle I.	Gugera Branch circle II, Dangali, Nahra, Nupewala, Killianwala, Bahlak Extensions and Proprietary villages.	Rakh Branch.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Town lands	...	...	...	...	...	10 0 0
I.	4 0 0	4 0 0	4 0 0	4 0 0	4 0 0	6 0 0
II	3 4 0	3 4 0	3 4 0	3 8 0	3 12 0	5 8 0
III	3 0 0	3 0 0	3 0 0	3 4 0	3 8 0	{ 5 0 0 4 8 0
IV	2 12 0	2 12 0	2 12 0	2 12 0	3 0 0	{ 4 0 0 3 8 0
V	2 8 0	2 8 0	2 8 0	2 4 0	2 8 0	{ 3 0 0 2 8 0
VI	2 0 0	2 0 0	2 0 0	2 0 0	2 0 0	2 0 0
VII	1 8 0	1 8 0	1 8 0	1 8 0	1 8 0	...
VIII	0 12 0	0 12 0	0 12 0	...	...	...

173. The sanctioned rates, shown at the head of paragraph 170, are average circle rates. Their application to the area under crops was not altogether simple. The method of distribution was calculated to give the amplest effect to the scheme of differentiation just described and the multifarious contingencies therein comprised. Schedules of rates, adjusted to suit the special characteristics of each circle, were drawn up and the cropped area ranged under the various classes in such a way that the average circle rate was not substantially exceeded. In this classification the merits of each square as an assessable medium came under the closest scrutiny. There was no distinction as regards

crops, but the rates varied by villages, and generally by squares within villages. *Mauzas* held by a single owner were not usually admitted to differentiation, and some *mauzas* presented so uniform a character that differentiation by squares was neither desired nor deserved. But this was unusual. More frequently a *mauza* would fall into two or more classes, in which case it would be described as belonging to the class, in which the largest portion of its area fell. The classes of land revenue approved for each circle are set forth above. The classification applied only to *nahri* land, both flow and lift: on other kinds of cultivation differentiation was not permitted and the rates shown in paragraph 158 were uniformly applied.

Some peculiarities will be observed in connection with the Rakh Branch. The cash rents on agricultural land situated within the limits of Lyallpur, Jhunra and Sangla were found to be so high as to justify a special assessment. Recent statistics of annual rent received read as follows:—Rs. 30, Rs. 27 and Rs. 44 per acre respectively. These lands were devoted almost entirely to market gardens, the produce of which finds a ready sale in the three towns, and the sanctioned rate was well below half net assets. For the other Colony towns no special rates were fixed. Again, in the IIIrd, IVth and Vth classes on the Rakh Branch two sets of figures are shown. The rates were originally Rs. 5, Rs. 4 and Rs. 3: but intermediate classes were created later to facilitate in their operation the reductions ordered on appeal (*vide* paragraphs 170 and 189).

Separate schedules were not prepared for the Extensions and Proprietary villages: the classes employed in these *mauzas* were identical with those fixed for neighbouring circles. Hence all but the Bhangu Extension are shown as amalgamated with Gugera Branch circle II, while the Bhangu itself is classed with its neighbour, Jhang Branch circle III.

174. Land irrigated by lift from the canal is assessed at half flow rates, that is to say the rates fixed for flow cultivation in a particular *mauza* or square are reduced by one-half for any portion of the *mauza* or square irrigated by lift. This was generous treatment, because *jhallars* are not used to cultivate inferior land. The concession was due to the special difficulties attendant on lift irrigation and the need for encouragement. It is not easy to get tenants for *jhallari* cultivation with flow land everywhere available, and there are large losses in fodder and *kamins'* expenses. The Irrigation department are very partial to *jhallars*, because they consume less water than would be taken in the ordinary course for flow cultivation. The average amount of *nahri-jhallari* land annually matured is 10,653 acres.

175. Occupier's rates are fully discussed in paragraph 60. The difference in the schedules respectively applicable to Colony and Proprietary *mauzas* has also been noticed in connection with the assessment of the latter *mauzas* (*vide* paragraph 170). It is only necessary to add a passing reference to the Lower Schedule of occupier's rates. This was a direct outcome of the Colonies Committee's deliberations, as expressed in their finding on this subject: "That water rates should be differentiated, and varying schedules applied to large areas, which on the average present marked differences of soil." There was some significance in the introduction of the lower schedule at this particular juncture. It coincided with the abolition of unlimited *kharaba*, as will be presently explained, as well as the enhancement of the land revenue charges. The coincidence was not accidental: the changes echo the keynote of the fluctuating system, as it was intended that they should, namely the adjustment of the Government demand to the outturn of every field in every harvest.

176. Owner's rate was abolished with the imposition of the new demand. Reference has already been made to the complexity of the fiscal system, as initially applied to the Chenab Colony, and the admitted need for greater simplicity. The imposition and subsequent abolition of owner's rate may be taken as an illustration of this tendency. The first Colony assessments were purely experimental. There was a nominal rate for land revenue, supplemented,

in view of the enhanced profits, which might be expected to accrue to landlords, by a charge known as owner's rate and amounting to Re. 1 per acre. Half of this charge was remitted in old proprietary holdings for 10 years from the commencement of irrigation: in Colony villages it was remitted altogether for the same period, being duly imposed thereafter. But with the progress of events the real proprietary profits began to emerge in a truer light and there were sufficient data available for an adequate land revenue assessment. The necessity for owner's rate ceased to exist; that is why it has no place in the new assessment.

D.—MALIKANA AND CESSSES.

177. *Malikana* remained a fluctuating charge, assessable for all classes of cultivation at the rate per acre of 6 annas for each rupee of land revenue but subject to a maximum of 12 annas. Proprietary land was of course exempt from *malikana*: likewise land in respect of which permission to purchase proprietary rights has been obtained, from the date of the first instalment paid towards such purchase.

178. Cesses were fixed at $13\frac{1}{3}$ per cent. of the land revenue, and in addition thereto, 5 per cent. being *lumbardari* fee and $8\frac{1}{3}$ per cent. local rate. This was also, as before, a fluctuating charge, applicable to all classes of cultivation.

E.—THE SYSTEM OF KHARABA.

179. The first Colony assessments were upon matured areas and Government dues were remitted on all failed crops. To this end every field in every holding was inspected each harvest. This system was known as "unlimited" or "holding-to-holding" *kharaba*. So long as any uncertainty in the supply of canal water existed, or any inequality in its distribution, a remedy had to be provided for those adversely affected. But inevitable as it was in the absence of careful differentiation in the revenue payable on lands which varied as to quality, command and situation, the system was nevertheless recognized to be defective even in theory. Nor was it satisfactory in actual practice. It afforded both landholders and officials a positive inducement to corruption, for there can be no doubt that affluent colonists were able to secure larger reductions than their weaker brethren. The inspecting officials were also loth to admit crop failure on a large scale, which might convict them in the eyes of their superior officers of inefficiency in the manipulation of the water-supply. Upon this subject the recommendations of the Colonies Committee foreshadowed the conclusions eventually adopted, though they were not unanimous as to the magnitude of the evil. The Government of India diagnosed the situation more explicitly, when they found in the system of unlimited holding-to-holding *kharaba* a serious incentive to popular discontent and decreed its abolition.

180. The final disposal of this question was among the matters referred to the committee of Canal and Revenue officers, which met at Simla on the 16th and 18th July 1910. The proceedings of this committee were confirmed by the Punjab Government in the Chief Secretary's letter no. 1833-S (Rev.-Irr.), dated 16th August 1910, to the Senior Secretary to the Financial Commissioners. Upon the subject of *kharaba* their conclusions were as follows:—

"1. The Committee recommend that the present system of *kharaba* should be abolished in all cases in which the irrigation supply is satisfactory. The decision in each case would be arrived at by the Deputy Commissioner (or Settlement Officer) and Executive Engineer in consultation, and would ordinarily be based on the fact that the canal-irrigated area is on the average not less than the permissible area and does not vary so greatly from year to year as to bring it in any year markedly below that area. Where the Revenue and Canal officers disagreed in the case of any village as to the question whether this standard had been reached, it would be assumed that the irrigation supply was still unsatisfactory.

2. In the case of villages, the irrigation supply of which is unsatisfactory, the Committee consider that *kharaba* should be continued until the Executive Engineer and the Deputy Commissioner (or Settlement Officer) agree that it has become unnecessary."

181. This extract describes the arrangements sanctioned for the Present position as regards holding-to-holding period of the new Settlement. It must be clearly understood that holding-to-holding *kharaba* has never been abolished, and still survives, for classes of cultivation other than *nahri*, e.g. *chahi*, *barani*, *sailab* and *abi*. For *nahri* cultivation it was at first restricted only as each Colony circle came under assessment. But with effect from *rabi* 1912 it was abolished to the extent contemplated for all remaining circles simultaneously. It now survives only where the revenue and Canal officers in consultation are agreed as to its necessity or have been unable to consent to its abolition, and the list of *mauzas* so favoured diminishes annually. Its complete disappearance is only a matter of time: by rigorous reduction of outlets, where supply is in excess, realignment of watercourses, where command is defective, and the introduction of modules, which tend to secure a constant supply, the Irrigation department are rapidly achieving what appeared a few years back only as an ideal impossible of attainment. The new assessment is on sown areas practically everywhere. The effect of this is to stimulate economy in the use of water, reduce overcropping, and consequently to assist exhausted soil in the process of recuperation. *Kharaba* remissions on the Rakh Branch in the years 1909, 1910 and 1911 amounted to 8.6, 9.62 and 15.44 per cent. for *kharif* and 4.47, 3.48 and 1.74 for *rabi* respectively. Conditions were much the same in the other circles. The increase in the area subject to land revenue, occasioned by the abolition of holding-to-holding *kharaba*, was thus very large. There is nevertheless no general desire to revert to the old system, though dissident voices are sometimes raised against the new order of things. In such circumstances, and considering the manifest imperfections of the old *régime*, the abolition of holding-to-holding *kharaba* cannot be regarded otherwise than with approval.

182. The general principle underlying the assessment in the Chenab Colony is that persons assessed should have Other kharaba remissions. the means of meeting the claims against them in the produce of the crop assessed, and that if there is no crop, there shall be no assessment. In the event of complete failure, due to causes beyond the control either of the cultivator or the Irrigation department, the assessment is entirely remitted, while compensation for partial failures is provided by means of partial remissions. The system of holding-to-holding *kharaba*, as indicated above, survives, so far as *nahri* cultivation is concerned, only in certain selected *mauzas*. But outside these areas claims for remission on account of failure from causes outside the control of the Irrigation department or cultivator may still be presented in respect of any *nahri* crop, and considerable areas are annually exempted for short supply, hail, floods, excessive or unseasonable rains, locusts, blight, bad germination, high or inferior soil and other miscellaneous reasons. These remissions, like holding-to-holding *kharaba*, apply both to land revenue charges and occupier's rate.

183. Rule 20 of the rules applicable to the Lower Chenab Canal, Current procedure as regards kharaba remissions summarized. issued under section 75 of the Northern India Canal and Drainage Act (Act VIII of 1873), as amended by notification no. 587 R. I., dated 9th May 1913, embodies all the provisions described in the preceding paragraphs. The subject is important enough to justify its quotation in full. It will be observed that whereas holding-to-holding *kharaba* is controlled by the *zilladar*, the power to grant other remissions rests with the Divisional Canal officer. The Simla Committee of 1910 formulated the new procedure in regard to widespread calamities affecting large areas. In such cases Deputy Commissioners are now empowered to convene a meeting of Executive Engineers before or after final crop measurements with a view to determining upon a proportional reduction of the demand or a special *kharaba* enquiry by holdings (*vide* Revenue Standing Order 61, Canals).

" I.—(1) In the case of some estates or defined parts of estates, for which the Deputy Commissioner and Executive Engineer agree that the water-supply is precarious and unsatisfactory, the *zilladar* is required to grant remissions on the following scale:—

- (a) No remission shall be given—
- (i) in respect of crops which have been cut or grazed prior to inspection;
 - (ii) when a light rate is charged for crops grown on the *wadh* of a previous crop;
 - (iii) when a special rate has been fixed on a *khariif* distributary for a first watering to start a *rabi* crop;
 - (iv) when a crop is equal to or better than an 8-anna one.
- (b) when a crop is equal to or better than a 4-anna one, but worse than an 8-anna one, half remission shall be granted.
- (c) when a crop is worse than a 4-anna one, full remission shall be granted.

In the case of mixed crops not specially classified the remission will be dealt with in accordance with rules 23 and 24.

- (2) Any cultivator not satisfied with the remission granted by the *zilladar* may prefer an appeal within 10 days of the communication to him of the *zilladar's* order. No appeal shall be allowed in respect of a crop which has been cut or grazed.
- (3) Appeals against the decisions of the *zilladar* may be presented to the Deputy Collector, Sub-Divisional or Divisional Canal officer and should be promptly enquired into and decided. The decision given on appeal by the Divisional or Sub-Divisional Canal officer or Deputy Collector, as the case may be, shall be final.

II.—In the case of estates not specified above, claims for remissions, which may arise from failure or stoppage of supply or from other calamities of a special and isolated character, shall be presented to the Divisional or Sub-Divisional Canal officer or Deputy Collector before the crop is cut and within 10 days of the occurrence of the calamity. The unit of remission in such cases will be the field number. If the claim is admitted, the Divisional Canal officer may remit to the limit of Rs. 100 in each individual case, provided that the aggregate remissions for any village do not exceed Rs. 1,000. If the Divisional Canal officer considers that higher remissions should be granted than those above specified, the sanction of the Superintending Engineer shall be required. Pending the decision collection shall be suspended.

Remissions are only admissible if there has been complete failure or destruction of a crop due to causes beyond the control of the cultivator. If the failure is so nearly complete that the cultivator recovers nothing but the seed and the bare cost of cultivation, it shall be treated as complete.

III.—In the case of a widespread recognized calamity affecting large areas, where the total remissions of occupier's rate are not likely to amount to more than Rs. 25,000 in any Canal Division, no further sanction is required, if the Deputy Commissioner and Executive Engineer concerned are in agreement; where remissions are likely to exceed that sum or where the Deputy Commissioners and the Executive Engineer are not in agreement, the case will be reported to the Superintending Engineer, who has power, in consultation with the Commissioner, to sanction up to one lakh of rupees in any division. Proposals for remissions in excess of the sum agreed to by the Superintending Engineer and Commissioner and cases, in which these officers are not in agreement, will be reported to the Chief Engineer for decision by him in consultation with the Financial Commissioners.

If it is believed that over a considerable area an average crop in a particular season—

- (a) is more than a 4-anna but less than an 8-anna crop, half may be remitted;
- (b) is less than a 4-anna crop, the whole may be remitted.

Notes—

- (a) Where there are two schedules of occupier's rates on a canal, this implies that a normal or 16-anna crop in an estate subject to the lower schedule yields a smaller outturn than a normal crop in an estate subject to the higher schedule.

- (b) A normal crop should be regarded as one giving a yield equal to that adopted by the Settlement Officer for that crop in framing his half net assets estimate.

IV.—Claims for remissions of ordinary charges, other than occupier's rate, payable for the use of canal water, shall be admitted only on proof of actual loss caused by the stoppage of supply; on proof of such loss, the whole or any portion of the charges may be remitted as hereinbefore provided.

V.—If a claim for remission of ordinary charges other than occupier's rate be rejected by the Divisional Canal officer, the claimant may prefer an appeal to the Superintending Canal officer."

184. The assessment is remitted in the case of *nabud* crops, that is where the seed has failed to germinate, and there is no limit to the amount of the remission in such cases. The *patwari* is not allowed to enter the name of any crop, until it can actually be seen upon the ground. Once entered, a crop is liable to assessment unless a claim for *kharaba* is preferred and admitted. There is, however, an intermediate stage, at which complete remissions are also given in the following circumstances. A crop, which has failed soon after germination, is known as a *talaf* crop. Questions regarding such crops must be decided before *girdawari*, and all crops, in respect of which a remission is claimed, must be inspected before the claim is accepted.

F.—EXEMPTIONS FROM LAND REVENUE CHARGES.

185. Certain agricultural lands are exempt from land revenue, *malikana* and cesses :—

- (1) Army Remount department—710 acres allotted in different parts of the Colony for the supply of fodder to stallion stables.
 - (2) Cavalry Regiments—8,989 acres allotted for Stud Farms. These grants were subject to a condition that Re. 1 per acre on account of owner's rate should be paid 11 years after allotment. With the abolition of owner's rate this condition became inoperative.
- Allotments to the Army Remount department, Cavalry Regiments, Agricultural and Irrigation departments.
- (3) Land allotted to the Agricultural Farm at Lyallpur—*vide* letter no. 17, dated 15th January 1908, from the Under-Secretary to Government, Revenue department, to the Junior Secretary to the Financial Commissioner, Punjab.
 - (4) Land allotted to the Irrigation department, whether for the purpose of tree plantations or ordinary departmental uses—*vide* letter no. 183, dated 31st August 1903, from the Revenue and Financial Secretary to the Junior Secretary to Financial Commissioner.

186. There are obvious reasons for mitigating the burden of assessment in the case of public departments directly or indirectly maintained in the interests of the agricultural community, and the Stud Farms are hardly less entitled to preferential treatment. A substantial concession accorded to the camel service grantees, however, requires a more detailed explanation. The conditions of tenure are detailed in paragraph 11. Various circumstances combined to render these terms far less acceptable than was originally expected. The camel men were excluded from the general scheme, which was to confer proprietary rights upon the rest of the Colony in process of time. They would thus in the ordinary course have continued to pay *malikana* after other *abad-kars* had ceased to do so. Their condition was not comparable with that of mule-breeding grantees, because the latter are nearly always *lumbardars*, who hold an ordinary grant, untrammelled by service conditions, in addition to the *lumbardari* square. But apart from this the camel men were hard hit by the

advent of canal irrigation, which had a most adverse effect upon camel breeding. This aspect of the question is dealt with in paragraph 105. The price of camels rose, casualties were frequent, and punitive measures were necessary to keep the corps at full strength. The camel men, always an unruly element, fell into a chronic state of discontent. Cultivating vicariously, or with the least possible expenditure of personal effort, prodigal in the management of their domestic affairs, they could hardly be assessed without regard to their economic difficulties. The course finally adopted was to waive the payment of *malikana* in the case of camel grantees, so long as the service conditions are maintained.

G.—THE AGENCY OF ASSESSMENT.

187. The assessment of land revenue charges inside the Irrigation boundary remained as before with the Irrigation department. It was felt that the Revenue staff could not, without a considerable addition to its strength, undertake the assessment of canal dues over large areas and make the necessary enquiries as to the condition of the crops in each irrigated field. There was, on the other hand, a very real connection between the distribution of water and the measurement of irrigated areas. The transition from the daily operations of the Irrigation department—patrolling of canal banks, inspection of outlets, repair of breaches, collection and supervision of labour, observation of excess or deficiency in supply—to actual assessment was easy and the canal agency the most economical, since their officers were constantly on tour in the irrigated tracts, while the district officers were fully occupied with other onerous duties. The responsibility of the Deputy Commissioner in this as in all other matters likely to effect the welfare of the people under his charge was, however, fully affirmed. The Deputy Commissioner has a right to point out what may appear to him to be defects in Canal administration, to obtain information with regard to alleged grievances and to be informed concerning the remedy proposed.

Rules of procedure to be adopted in connection with the assessment of land revenue, *malikana* and cesses by the Irrigation department have been incorporated in the Irrigation Manual. They are partially reproduced as Appendix III-A to this report. They apply only within the Irrigation boundary and all classes of cultivation fall within the scope of the rules. The Irrigation department has been supplied by the Settlement officers with copies of the orders determining the assessment and detailed village assessment papers. Information concerning exemptions from *malikana* and the grant of proprietary right is provided from time to time, as occasion demands. The completed demand statements are forwarded by certain dates, fixed for each harvest, to the Collector of the district, with whom the responsibility for collection rests (*vide* paragraph 215).

188. Forty-nine proprietary villages and one Colony *mauza*, included in the Chenab Colony assessment, are situated wholly or partly outside the Irrigation boundary. As the Canal department do not operate outside the Irrigation boundary, the assessment on lands so situated is conducted by the Revenue staff. The assessment is fluctuating and revenue rates are identical on both sides of the Irrigation boundary. Outside this limit all cropped land is classed either as *chahi*, *abi*, *barani* or *sailab*. Each method of cultivation is described in paragraphs 159 to 162. The abolition of the old fixed assessments was necessitated by the desire to establish a uniform system throughout the whole Colony area and the exigencies of the situation in the *mauzas* concerned. *Sailab* cultivation with the aid of flood water from the Ravi or the Deg is already a precarious business, not likely to improve with the proposed diversion of the Deg: *abi* is similarly affected: and the *mauzas* themselves are decimated from time to time by migrations to neighbouring Colony tracts. These are conditions clearly indicating a system of fluctuation, which is at the same time most favourable to the interests of Government, because when flood water is plentiful, *sailab* and *abi* cultivation is both exten-

sive and successful. Rules for the assessment of fluctuating land revenue and cesses outside the Irrigation boundary by the Revenue staff appear as Appendix III-B to this Report; of which appendix schedule 1 shows the *mauzas* wholly or partially subject to the rules.

H.—RECEPTION OF THE NEW ASSESSMENT.

189. The table in the margin shows the number of objections and appeals lodged in respect of each circle. The objections were decided by the Settlement officers under section 52 of the Land Revenue Act, appeals by the Commissioner of the Division. Since access to the higher court is only by way of an appeal against an order on an application for reconsideration of the assessment, many of these objections were probably formal. But, apart from this, the unpopularity of the new demand must be frankly admitted. The volume of objections was largely engineered by interested parties and the vernacular press enlisted in support of the disaffection. Certain newspapers even resorted to false statements of fact and erroneous statistics. It is needless to say that the complaints in most cases indicated, not reasonable grievances, but only the natural tendency of the *zamindar* to leave no stone unturned in the pursuit of his private advantage. A characteristic attitude was that adopted by the camel men of Gugera Branch circle II, who received grants, to which their only title was the generosity of Government, on terms, for the fulfilment of which they showed the greatest disinclination, who cultivate vicariously and spend with the most reckless improvidence: what the camel grantees objected to was a singularly light assessment, coupled with a gratuitous exemption from the payment of *malikana*. The immense capital expenditure by Government on canal irrigation, the transformation of a waste and howling wilderness into a land of prosperity and plenty, its allotment in holdings out of all proportion to standards in the old home, the remission of legitimate Government dues for an initial term of years, the eventual imposition of an assessment reconcilable with every precedent that could be adduced—all this failed apparently to impress the rural population with a sense of their good fortune. Objections and appeals were for the most part rejected *in limine*. The acceptances on the Rakh Branch, where the appellate work surpassed all previous records, have a special meaning. This circle was subjected, for reasons elsewhere fully set forth, to a heavier assessment than the rest. As an act of clemency, pure and simple, some reductions were made on appeal. Prior to this a number of objections had also been accepted by the Settlement officer on revision, but for technical reasons: in announcing the new demand the sanctioned rate was inadvertently exceeded by a considerable margin, and the excess was accordingly dissipated in the disposal of objections. By 1914 the popular feeling against the new assessments, which reached its climax in 1913, when the Rakh Branch circle was being dealt with, had totally subsided, and the assessment of the Extensions and Proprietary villages, though just as high as the earlier demands, was not only well received, but even evoked favourable comment. The ease with which the new demand has so far been met—for coercive processes are most sparingly employed—and the complete cessation of disquiet among the populace at large are proof in themselves, if proof were not already at hand in the sustained prosperity of the Colony, how disingenuous was the earlier agitation and how entirely wanting in any just or tangible basis.

OBJECTIONS AND APPEALS.

Circle.	Objections.			Appeals.		
	Total.	Accept- ed.	Reject- ed.	Total.	Accept- ed.	Reject- ed.
Shang Branch, circle I ...	312	13	299	82	...	82
Shang Branch, circle II ...	308	3	305	65	...	65
Shang Branch, circle III ...	150	...	150	30	...	30
Gugera Branch, circle I ...	273	5	268	81	...	81
Gugera Branch, circle II ...	272	8	264	48	...	48
Rakh Branch ...	1,186	409	777	633	471	162
Extensions and Proprietary villages.	74	...	74	29	...	29

Financial results—Land revenue.

CIRCLE.	NAHRI (FLOW).			NAHRI (LEFT).			BARANI.			CHAHIL.			SAIKAR.			ABUL.			Total demand.
	Area.	Rate.	Demand.	Area.	Rate.	Demand.	Area.	Rate.	Demand.	Area.	Rate.	Demand.	Area.	Rate.	Demand.	Area.	Rate.	Demand.	
	Acres.	Rs. A. P.	Rs.	Acres.	Rs. A. P.	Rs.	Acres.	Rs. A. P.	Rs.	Acres.	Rs. A. P.	Rs.	Acres.	Rs. A. P.	Rs.	Acres.	Rs. A. P.	Rs.	Rs.
Jhang Branch, Circle I	198,731	3 1 7	6,15,859	3,196	1 8 10	4,960	1,072	0 12 0	804	116	1 4 0	145	Nil	1 0 0	Nil	Nil	0 12 0	Nil	6,21,768
Jhang Branch, Circle II	220,534	2 9 7	5,73,159	22	1 4 10	29	4,200	0 12 0	3,150	276	1 4 0	345	Nil	1 0 0	Nil	Nil	0 12 0	Nil	5,76,683
Jhang Branch, Circle III.	71,516	2 5 1	1,65,753	43	1 2 6	50	1,204	0 12 0	903	7	1 4 0	9	Nil	1 0 0	Nil	Nil	0 12 0	Nil	1,66,715
Gugera Branch, Circle I	364,065	3 5 0	12,05,965	1,026	1 10 6	2,693	4,263	0 12 0	3,197	Nil	1 4 0	Nil	Nil	1 0 0	Nil	Nil	0 12 0	Nil	12,11,855
Gugera Branch, Circle II	322,260	3 7 10	11,24,553	1,316	1 11 11	2,296	1,301	0 12 0	976	Nil	1 4 0	Nil	55	1 0 0	55	Nil	0 12 0	Nil	11,27,980
Rakhi Branch	445,818	4 9 0	20,34,045	1,775	2 4 6	4,049	7,283	0 12 0	5,462	36	1 4 0	45	Nil	1 0 0	Nil	Nil	0 12 0	Nil	20,43,601
Extensions	108,876	3 0 7	3,15,415	2,614	1 8 3	3,902	1,271	0 12 0	953	376	1 4 0	470	228	1 0 0	228	8	0 12 0	6	3,21,034
Proprietary villages	19,776	2 9 3	50,985	61	1 4 8	79	816	0 12 0	612	2,281	1 4 0	2,851	3,808	1 0 0	3,808	500	0 12 0	375	58,710
Total	1,746,576	...	60,95,734	10,653	...	18,118	21,410	...	16,057	3,092	...	3,865	4,091	...	4,091	508	...	381	61,28,246

I.—FINANCIAL RESULTS.

190. The statistics in the foregoing table show the annual collections anticipated under the head of land revenue proper. They are arranged by circles and the returns for each class of cultivation are separately distinguished. By the addition of cesses and *malikana* the total assessment amounts to no less than Rs. 70,24,008. Details of this process appear in the abstract marginally appended. These statistics are based upon a careful survey of existing conditions in each circle; in fact, as compared with actual performance in recent years, they err on the side of caution. Of the total allotted area 95 per cent.

is assumed to be annually assessable. That is at first sight an unwarrantable assumption, since the Irrigation department only profess to supply water for 75 per cent. The efficiency of the Canal is, moreover, an inconstant factor, subject to wide seasonal variations, and the Triple Project, though designed not to encroach upon the supply of water earmarked for the Lower Chenab Canal, must necessarily invest every estimate of future returns with an air of uncertainty. The new assessment, it might also be argued, is onerous enough to affect sowings appreciably. These are doubtless weighty considerations. But on the other hand *chahi* and *barani* cultivation is constantly increasing, and recent improvements in the internal régime of the Canal itself have vastly augmented its value as an instrument of crop production. The history of the Colony is one of steady expansion in the area sown, despite the fact that the volume of water available, while it fluctuates within definite limits, has remained substantially the same. Every year water is used to better advantage, every year larger and larger areas are reclaimed—so keen is the struggle for wealth, so inviting the means thereto. That these tendencies have asserted themselves in the older circles is proof of the future that may be predicted for the newer. In short, though it must be distinctly understood that this estimate of financial results pre-supposes the maintenance of the water-supply at its present level and the absence of abnormal widespread calamities, though in the case of a fluctuating assessment such an estimate must of necessity be approximate only, a return of Rs. 61,28,246 may reasonably be expected in an ordinary year under the head of land revenue.

Cesses are calculated at 13½ per cent. of the total land revenue. *Malikana* is excluded altogether, save on areas in respect of which proprietary rights can never be obtained, that is land allotted for mule breeding, *inamdari* leases, *tumbardari* and menials' squares—which areas comprise 106,281 acres. Camel service grants are exempt from *malikana* (paragraph 186), otherwise they too would have been included in the area assessable. *Malikana* is also still paid on upwards of 250,000 acres, allotted to peasants and *nazarana* grantees; but acquisition of proprietary rights in this area is only a matter of time and is even now rapidly proceeding, so the *malikana* paid at present is not reckoned as part of the total demand leviable in future.

J.—TERM OF SETTLEMENT.

Dates of imposition and provisional term of the new settlement.

Circle.	New demand imposed from			Term of Settlement expires after
Jhang Branch, circles I, II, III ...	Rabi, 1911	...	...	} Kharif, 1920.
Gugera Branch, circle I ...	Kharif, 1915	...	...
Bhangu Extension ...	Rabi, 1912	...	...
Gugera Branch, circle II ...	Kharif, 1913	...	...	} Kharif, 1921.
Nalra, Nupewala and Killianwala Extensions ...	Kharif, 1914	...	...
Bahlak Extension ...	Kharif, 1916	...	...
Proprietary <i>mauzas</i> ...	Rabi, 1913	...	...	} Kharif, 1922.
Dangali Extension ...	...	...	...
Rakh Branch ...	...	...	...

191. A provisional limit of 10 years has been announced for the new assessment, except in the case of the Extensions and Proprietary villages, which were classed for the sake of convenience with the neighbouring circles. It is of no great consequence that some of these small areas receive by this arrangement a very short term of assessment. The results for the whole Colony are shown above. It remains to consider whether this provisional limit is to be confirmed or extended, and the point is one upon which the orders of Government are required.

The Rakh Branch assessment may justly be described as full and fair according to every recognized canon of Settlement policy. It was based upon a produce estimate neither excessive nor over-cautions, but frankly reflecting existing conditions (*vide* paragraphs 166, 167 and 170). There were liberal reductions on appeal and the final revenue rate was only 7½ per cent. of the half assets : compared with the cash rents (paragraph 137), its moderation is even more obvious. The Rakh Branch is a finished product of colonial enterprise, its *mauzas* are flourishing settlements with an abundant working population, some of them imposing collections of brick buildings—mosques, *dharmaśālas* and schools, besides private residences—which attest the high level of the general prosperity. The perfection of the irrigation arrangements is most marked, while the agricultural classes, in only one other circle so extensively recruited from the best sources, will bear comparison with the natives of any district in the Province as regards skill, industry and intelligence. The colonists of this favoured region lay stress upon their early hardships, the absence of roads and railways, high cost of the necessaries of life, scarcity of labour and the like. For this they have been amply compensated by 20 years of concession rates. Far less consideration was shown to the other assessment circles, and in the face of this generous treatment no claim to further preference is worthy of acceptance. Grantees on the Rakh Branch would probably like to have their assessment revised after 10 years in the hope of reduction. That is not a course justified by the circumstances of the case. I would recommend that the present assessment be left undisturbed for a term of 20 years.

Elsewhere conditions are somewhat different. In regard to the term of Settlement the remaining circles are similarly circumstanced, and should receive similar treatment. Here only 10 years of concession rates intervened before the imposition of the enhanced demand. The new assessment was, however, short of what might have been legitimately imposed, though for this there were sufficient reasons. Colony villages hardly reach maturity under 10 years : in the adolescent stages there are serious inroads upon the resources of the colonists : the family and all its appurtenances have to be transported from the old home, cattle and implements bought, the new homestead founded upon a firm footing. Growth may be stunted or development arrested by periods of economic pressure with labour recalcitrant or unobtainable ; the watercourses take time to settle down to the steady performance of their allotted round ; communications are not established in a day. The present assessment, by avoiding abrupt advances on previous rates, secured for these circles the observance of one of the guiding principles of settlement policy. But in 10 years more they will be ripe for the full and fair assessment just imposed on the Rakh Branch. For these circles I propose that the provisional term of settlement be confirmed, as shown in the preceding table.

192. The provisional term of 10 years fixed for the new assessment was coupled with a condition as to the introduction, in the interim, of fixed assessments. In the first four circles the orders ran as follows :—

“That provision be made for the substitution of a fixed land revenue demand hereafter or consolidated contract land revenue and water rates, whenever this is desired by the people with the approval of Government.”

For the Rakh Branch and Extensions the wording was :—

“ Government reserves the right to introduce fixed assessments for land revenue or occupier's rate or both at any time compulsorily, at rates which will produce a demand not exceeding that yielded by the fluctuating assessment.”

CHAPTER VII.—The reassessment by circles.

A.—JHANG BRANCH, CIRCLE I.

Principal statistics, Jhang Branch, Circle I.

Tribal distribution.		Percentage of whole circle.	Number of <i>manzas</i>	...	...	162
			Population (1911)	...	...	115,781
			Total area	...	...	258,429 acres.
<i>Immigrant</i> (65·4 per cent.)			Allotted area	...	...	205,526 „
Sikhs and Hindus—Ludhiana Jat	...	18·68	Matured area (average of five years)	...	...	194,130 „
„ Amritsar „	...	16·5	Proportion of matured to allotted area	...	...	94 per cent.
„ Other „	...	10·52	Half assets rate	...	...	Rs. 3-10-0
Jat Musalmans	...	11·2	Revenue rate (<i>nahai</i> flow)	...	...	„ 3-1-7
Arains	...	3·7	Proportion of revenue to half assets rate	...	...	85 per cent.
Other Musalmans	...	4·8	Total new demand	...	...	Rs. 6,21,768
<i>Indigenous</i> (34·6 per cent.)			Date of imposition	...	...	<i>Rabi</i> , 1911.
Hitharis	...	6·6				
Janglis	...	25·7				
Balochis	...	2·3				

193. This circle was assessed by Mr. de Montmorency with characteristic care and deliberation; no other, perhaps, was so thoroughly explored by its assessing officer. Jhang Branch circle I is bounded on the north by proprietary villages of the Chenab Hithar, south and east by the Rakh Branch drainage. Its only physical feature of any importance is the Budh *nala*, which enters the circle soon after crossing the Pabbarwala distributary and thenceforth breaks the level plain into two distinct tracts. In the vicinity of the Budh the face of the country is changeable and uneven, full of ravines, with here and there a thin layer of clay on river sand. The worst portion of the circle is this between the Pabbarwala distributary and the Bhowana Branch. Elsewhere, except for the 9 tail villages of the Nasrana distributary, which are generally sandy, good loam predominates. Considered as a whole, however, Jhang Branch circle I is not remarkable for its soil; in fact, its percentages of *kallarathi* and *relli* land (6·06 and 4·2 respectively) are unusually high.

Statistics of tribal distribution show immigrants in the proportion of 65·4 per cent. to the indigenous percentage of 34·6. This, at any rate, places the circle in a more favourable light: still more the fact that 35·18 per cent. of the whole is held by Amritsar and Ludhiana Jat Sikhs, the flower of the Punjab peasantry. With a good sprinkling of Musalman Jats and Arains—the former mainly from Amritsar or Hoshiarpur and the best of their class—the immigrant allotment may be regarded as well above the average. All these hold land south of the main Branch. The Chiniot tahsil is given over to Janglis and Jhang Hitharis of various tribes. Communications by road and rail are good, and the markets of Gojra, Lyallpur, Chiniot and Jhumra are conveniently near, though not actually within, the circle boundaries. With a water-table only 15·46 feet below the surface in the Chenab riverain, well irrigation should be more extensive than it is: at present only about 116

acres of *chahi* crops are matured annually. *Barani* is better, rainfall being considerable in these parts. However, to all intents and purposes *nahri* cultivation need alone be considered, and the proportion of matured to allotted area (94 per cent.) is eminently satisfactory. Crops are normal: sugar (1·4 per cent.) should be higher for a circle, constituted as this is: cotton (8 per cent.) is well up to the mark and gram (6·2 per cent.) rather above it: wheat and *toria* are the principal staples as usual. 83·3 per cent. of the allotted area is held by peasants, which is an earnest of progress and prosperity, and the pressure of population is already considerable. Jhang Branch I is an old established circle, and the imposition of a revenue rate amounting to Rs. 3-1-7 only can have no possible ill effect in a tract so well provided with the means of successful agricultural development and so conveniently situated as this.

B.—JHANG BRANCH, CIRCLE II.

Principal statistics, Jhang Branch, Circle II.

Tribal distribution.			Percentage of whole circle.	Number of <i>mauzas</i> ...	220
				Population (1911) ...	132,678
				Total area ...	353,658 acres.
<i>Immigrant</i> (47·35 per cent.)				Allotted „ ...	253,146 „
Sikh and Hindu Jats	...	...	15·47	Matured „ ...	220,248 „
„ „ Kambohs	...	...	6·17	Proportion of matured to allotted area ...	87 per cent.
Jat Musalmans	...	...	11·42	Half assets rate ...	Rs. 3-1-3
Arains	...	...	5·9	Revenue rate (<i>nahri</i> flow) ...	„ 2-9-7
Others	...	...	8·39	Proportion of revenue to half assets rate ...	84 per cent.
<i>Indigenous</i> (52·65 per cent.)				Total new demand ...	Rs. 5,76,683
Butharis—Hindu	...	...	2·88	Date of imposition ...	<i>Rabi</i> , 1911
„ Musalman	...	...	20·93		
Janglis	...	...	25·14		
Balochis	...	...	3·7		

194. This somewhat misshapen circle is definitely inferior to Jhang Branch I. There the *dhaya* only touched the fringe: here it invades the very heart of the circle and practically cuts it in two. In character the natural divisions, into which the tract is thus split up, are diametrically opposed. The Bar land is level and easy to irrigate, if not so uniform in quality as elsewhere, for from Gojra downwards it changes from the usual loam, friable and fertile, to a sour, impermeable type of soil, stiff in texture, and without inordinate labour comparatively unproductive. Beyond the *dhaya* difficulties of a different kind assert themselves; there are blocks of good *maira*, but they are surrounded as often as not by sandy *tibba* or hard land of the kind just described. Villages in or adjoining the *budh* have a most variable character, worthless *rarri* or *rappar* alternating with occasional pockets of the best *rohi* or *maira*. This region is also ill-provided with markets and means of communication, whereas the Bar tract has at least the Railway, with Gojra and Toba Tek Singh stationed at convenient intervals. The tribal composition of Jhang Branch II is unsatisfactory, though the pressure of population is not inconsiderable. Immigrants occupy 47·35 per cent. only, a smaller area than in any other circle, except the Extensions: however, quality is in this case superior to quantity, for the *personnel* is good and the immigrant allotment is nearly all in the best country—the Bar being mostly apportioned to Jat Sikhs (15·47 per cent.), Kambohs (6·17 per cent.), Jat Musalmans (11·42 per cent.)

and Arains (5·9 per cent.). North of the *dhaya* Jhang Hitharis, Janglis and Balochis hold the field. Criminal, slovenly and indolent, the Balochis perhaps touch the limit among colonists for general ineptitude. Neither are the Janglis and Hitharis equal to the best of their kind—for instance those on the Burala Branch—these aborigines of the Chenab riverain being listless and unenterprising folk. So much for soil and population. Other agricultural statistics are not more reassuring. Only 87 per cent. of the allotted area is matured annually: this testifies to the difficulties of command and germination suggested by the foregoing remarks on the physical character of the circle. Wheat occupies a large area (48 per cent.), but, said Captain Ferrar, the assessing officer, “wheat finishes badly beyond the *dhaya*”, as compared with Bar-grown wheat. *Toria* (8·3 per cent.) is normal; cotton (6·7 per cent.) below the average; fodder crops (21·8 per cent.) constitute a circle record—doubtless owing to the large frontage on the Chenab and the nomad propensity for cattle. Add the fact that no less than 15·2 per cent. of the circle is held by *nazarana* grantees, and the survey of local conditions is complete. It is hardly surprising, after this catalogue of unfavourable symptoms, to find that the revenue rate worked out as low as Rs. 2-9-7: yet it is not lower than the circumstances of the circle warrant.

C.—JHANG BRANCH, CIRCLE III.

Principal statistics, Jhang Branch, Circle III.

Tribal distribution.				Percentage of whole circle.	Number of mauzas	...	93
<i>Immigrant</i> (78·95 per cent.)					Population (1911)	...	39,407
					Total area	...	142,750 acres.
					Allotted „	...	82,426 „
					Matured „ (average of 5 years)	...	63,356 „
					Proportion of matured to allotted area	...	81 per cent.
					Half assets rate	...	Rs. 2-11-6
					Revenue rate (<i>nakhi</i> flow)	...	„ 2-5-1
					Proportion of revenue to half assets rate.	...	80 per cent.
<i>Indigenous</i> (21·05 per cent.)					Total new demand	...	Rs. 1,66,715
					Date of imposition	...	<i>Rabi</i> , 1911

195. This circle was assessed by Captain Ferrar. It lies roughly between Jhang, Gojra and Toba Tek Singh in a remote and inhospitable region. The proximity of these market towns and two lines of railway is somewhat neutralized by bad roads and an entire absence of metalling. Only a small fragment of the circle, at the head of the Dhaular distributary, lies on the Bar and partakes of its fertile character: thereafter the *dhaya* intervenes and the landscape changes its complexion: for beyond the *dhaya* sandhills, *nalas* and stiff *kallarathi* soil constitute the usual order of things. The Khewra country again is something apart, not separated off by any marked natural barrier, yet by reason of its sandy and intractable quality approximating much more to the dry area of the western Punjab than to the typical Bar as it appears in other circles. Much of *retli*, *kallarathi* and *rappar*, with little *rohi* and the usual preponderance of *maira*, is a summary of soil conditions. No less than 78·95 per cent. of this circle was made over to immigrants, because it was supposed that only colonists of the best class would be equal to its reclamation. Arains of Hoshiarpur and Jat Musalmans of Gurdaspur, Hoshiarpur and Sialkot were the principal immigrant grantees: Sikhs are comparatively few in number. On the Dhaular, Hitharis and Janglis of Jhang or Multan were established. With a matured area amounting to 81 per cent. only of the full allotment Jhang Branch III is the worst of all the Colony circles in this respect. Crop statistics disclose nothing out of the common—sugar, 2·3 per cent., a tribute to the presence of mid-Punjabis in force; wheat, 51·1 per cent., a circle record; *toria* 9·2 per cent. and normal; cotton, 5·2 per cent., very

poor. It is essentially a *rabi* circle : sugar holds its own, but the same cannot be said for maize and cotton. Wheat and *toria*, on the other hand, flourish on the sandy loam, of which the circle is ordinarily composed : *toria*, like gram, has made great strides in recent years. In its proportion of peasants (83·1 per cent.) and *nazarana* grantees (10·4 per cent.) Jhang Branch III is by no means ill-provided : yet the population is not what it should be in a tract, which has had ample time to settle down. This small and inconsiderable circle was only assessed to a *nahri* rate of Rs. 2-5-1, a natural consequence of its unsatisfactory soil conditions—wheat and sugar, for instance, could only be estimated to yield 8½ and 12 maunds per acre respectively—but at the same time proof positive that every element of weakness was justly, and even generously, appraised.

D.—GUGERA BRANCH, CIRCLE I.

Principal statistics, Gugera Branch, Circle I.

Tribal distribution.	Percentage of whole circle.	Number of <i>mauzas</i> ...	273
		Population (1911) ...	229,565
		Total area ...	461,638 acres.
<i>Immigrant</i> (90·55 per cent.)		Allotted „	370,773 „
Sikh and Hindu Jats ...	37·49	Matured „ (average of 5 years) ...	345,491 „
„ „ Sainis ...	2·90	Proportion of matured to allotted area ...	93 per cent.
„ „ Kambohs ...	1·68		
Arains ...	11·91	Half assets rate ...	Rs. 4-2-7
Jat Musalmans ...	10·15	Revenue rate (<i>nahri</i> flow) ...	„ 3-5-0
Gujars ...	4·85	Proportion of revenue to half assets rate ...	80 per cent.
Others (Hindu, Musalman, Christian, etc.) ...	21·57		
<i>Indigenous</i> (9·45 per cent.)		Total new demand ...	Rs. 12,11,855
Hitharis ...	7·11	Date of imposition ...	<i>Rabi</i> , 1911
Janglis and Balochis ...	2·31		

196. The assessment of Gugera Branch circle I was carried out by Captain Ferrar, who imposed a *nahri* rate of Rs. 3-5-0. Save for a few outlying estates in the Khangah Dogran tahsil, the circle is one of singular uniformity. From Mohlan to Tarkhani it rolls in a wide expanse of typical Bar country, rich and prosperous, sloping steadily, though to all appearances imperceptibly, from west to south, but unbroken by *budh*, *dhaya* or *nala*, which might confuse or disturb the processes of irrigation. Below Mungi a change declared itself, but even here land that seemed at first of little promise has yielded to the stubborn onslaught of the Jats and Arains, who possessed it, and proved inferior to none of the rest. The soil returns in fact show an almost complete absence of all but *maira* and *rohi*, which together compose 97·31 per cent. of the whole. Of markets Jaranwala alone lies within the circle boundaries, but good, and in some cases metalled, roads lead to others just outside ; so that, from its central position between two lines of Railway, the circle cannot justly claim to be at any great disadvantage with regard to disposal of produce and means of communication. Tribal distribution is unique, since immigrants furnish no less than 90·55 per cent. of the total allotment. Jat Sikhs, Sainis and Kambohs lead the van, with the Musalman Jats and Arains some distance behind. Gujars of rather weak and purposeless character occupy 4·85 per cent. between Rodu Koru and Jhok Ditta. The Sikhs hold most of the tract between Tarkhani and Buchiana, Janglis and Hitharis being practically confined to the vicinity of Buchiana and the scattered *mauzas* above

Mohlan. It is unfortunate that 25·2 per cent. of the circle are *nazarana* grantees and a considerable number military pensioners : neither of these classes are usually associated with progress and enterprize. Yet the crop statistics in this circle suggest the most favourable inferences ; sugar 2·8 per cent., cotton 10·1 per cent., wheat 46·2 per cent., *toria* 11·1 per cent., maize 6·2 per cent.—no other circle can show such an aggregate of profitable commodities. Clearly the colonists of Gugera Branch I are alive to the demands of the market and choose their crops with unusual deliberation. It is probable that this circle will eventually surpass even the Rakh Branch in wealth and population : at settlement, its recent colonization and comparatively undeveloped state (*vide* paragraph 166) were held to constitute extenuating circumstances and gave it the benefit of an assessment, the moderation of which, by comparison with the resources just enumerated, will be self evident.

E.—GUGERA BRANCH, CIRCLE II.
Principal statistics, Gugera Branch, Circle II.

Tribal distribution.	Percentage of whole circle.	Number of <i>manzas</i> ...	267
		Population (1911) ...	178,999
<i>Immigrants</i> (50·47 per cent.).		Total area ...	440,456 acres.
		Allotted „ ...	327,824 „
Sikhs and Hindus (Jat, Kamboh, etc.) ...	18·9	Matured „ (average of last 5 years) ...	318,061 „
Arains	14·89	Proportion of matured to allotted area ...	97 per cent.
Jat Musalmans	7·61	Half assets rate ...	Rs. 4-3-8
Rajputs	4·15	Revenue rate (<i>nahri</i> flow) ...	„ 3-7-10
Others (Musalman, Christian, etc.) ...	1·92	Proportion of revenue to half assets rate ...	82 per cent.
<i>Indigenous</i> (49·53 per cent.).		Total new demand ...	Rs. 11,27,880
Hitharis	6·51	Date of imposition ...	<i>Rabi</i> , 1912
Janglis—Kharral	7·48		
„ Other	17·32		
Balochis	18·22		

197. No assessment circle has less claim to homogeneity than Gugera Branch II. Stretching in a shapeless mass from the Buchiana Escape to the railway station at Shorkot Road, it embraces within its boundaries a singular variety of tribes and tenures. The immigrant and indigenous allotments are almost equal in extent ; nowhere else is the balance so true. Among the former the Sikh element, mainly established about Samundri, are most conspicuous : the Arains (14·89 per cent.) are scarcely less numerous—they have done wonders with the tract about Khikhi, which originally showed little promise. Rajputs and Jats practically complete the list of immigrants. A feature of the allotment in this circle is the large area held by military pensioners (8 per cent.), chiefly in the vicinity of Samundri and Bhagat. Of the indigenous holding the most important section (24·8 per cent.) is occupied by Janglis, who include most of the leading Kharrals in the Lyallpur district. The Balochis are almost entirely camel grantees, the allotment of this circle coinciding with the introduction of the service scheme. If the population is not all that could be desired, Gugera Branch II has nevertheless many advantages. Soil is of pronounced excellence, save only where the circle abuts on the desert and breaks up into sandhills. Fortunately the indigenous tribes are mainly located on the Tandlianwala and Samundri distributaries or the upper reaches of the Burala Branch, where the land is uniformly good. The circle is completely traversed by the Chichoki-Shorkot Road railway line and markets are everywhere accessible : Tandlianwala alone is actually within

its limits, but Jaranwala, Toba Tek Singh and Kamalia lie only just outside. There is, it must be admitted, a distinct want of metalled roads, which will doubtless be remedied in time. 97 per cent. of its allotted area is matured annually, so the circle leads in the matter of water supply from the canal: this record is the more remarkable, because there is little *barani* cultivation—the situation of the circle precludes the idea of strength or regularity in the rainfall—and of *chahi*, *sailab* or *abi* practically none at all. The high percentage of crops matured is probably due to recent improvements in the *régime* of the Gugera Branch. Crop statistics are not very satisfactory: cotton is well patronized, but far too large an area (19·2 per cent.) is devoted to fodder crops: the popularity of *toria* (14·3 per cent.) is explained by its usefulness as fodder for camels: in sugar (1·0 per cent.) the circle falls below the rest. Yet with an adequate and rapidly expanding population Gugera Branch II gives promise, in spite of its drawbacks, of a very prosperous future: it has only a small admixture (4·8 per cent.) of the objectionable *nazarana* grantee: its proportion of peasants (86·7 per cent.), though it includes some idlers, is highest of all circles; similarly, minors' lands leased by auction in this circle reached the record figure of Rs. 16-4-8½ per acre. Viewed in the light of these considerations the *nahri* flow rate (Rs. 3-7-10) is extremely lenient. True, Gugera Branch I gets off with Rs. 3-5-0, but the difference is slight and the assessment of Gugera Branch II came later, when a new schedule of prices was in operation. No one would maintain that Gugera Branch I is not the better circle: the fact is both are assessed so far below their rateable value that minor differences, as between the one and the other, are of little account.

F.—THE RAKH BRANCH.
Principal statistics, Rakh Branch Circle.

Tribal distribution.		Percentage of whole circle.	Number of <i>mauzas</i>	296
			Population (1911)	296,713
			Total area... ..	597,910 acres.
<i>Immigrant (79·05 per cent.)</i>			Allotted "	457,024 "
			Matured " (average of 5 years) ...	439,917 "
Sikh and Hindu Jats Anritsar		9·22	Proportion of matured to allotted ...	96 per cent.
" " " Other		20·46	Half assets rate by rents in kind ...	Rs. 6-6-8
" " " Kamboh		4·15	Ditto cash rents (1911-12) ...	7-4-6½
" " " Others		7·07	Revenue rate (<i>nahri</i> flow)	4-9-0
Jat Musalmans		18·70	Proportion of revenue rate to half assets rate by rents in kind ...	74 per cent.
Arains		12·38	Proportion of revenue rate to half assets rate by cash rents (1911-12) ...	63 "
Others (Muselman, Christian, &c.) ...		7·07	Total new demand	Rs. 20,43,601
<i>Indigenous (20·95 per cent.)</i>			Date of imposition	Rabi, 1913
Hitharis		8·35		
Janglis and Balochis		12·0		

198. The Rakh Branch, though two districts—Lyallpur and Gujranwala—dispute the honour of possessing it, may reasonably be regarded as a homogeneous unit, since it lies wholly in the high Bar, away from the disintegrating influences of banks, depressions and *nalas*. Chief among Colony circles in wealth, size, importance and antiquity, the problem of its assessment was no everyday affair. But first of its distinguishing features. In the matter of markets and communications the Rakh Branch is exceptionally favoured: the three *mandis* of Lyallpur, Jhumra and Sangla are within its boundaries: every part has easy access to the Railway, and excellent trunk roads play no small part in expediting the transport of merchandise. Soil is not of the best: there are large areas returned as *kallarathi* and *retli*, for which 4·74 per cent. *rohi* scarcely compensates. As regards soil, the circle stands midway between the Chenab and Ravi basins, and partakes of the character of both: if the northern fringe inclines to sand and *kallar*, the lower reaches of the Rakh and Mian Ali Branches leave nothing to be desired. With 79·05

per cent. of its area allotted to immigrants the circle challenges comparison with any other except Gugera Branch I. The Sikh holding is the largest, for practically all the Hindus shown in the returns are Jats or Kambohs of that persuasion. Their chief settlements are located in the vicinity of Sangla, Shahkot and Dijkot. Musalman Jats occupy 18·7 per cent., mainly between Tqhana and Sangla, moderate cultivators, neither the strength nor the weakness of the circle and much inferior to the Arains (12·38 per cent.), who are the *elite* of their kind. The Janglis and Hitharis have allotments near Lyallpur and elsewhere, but generally fared ill as regards the quality of land secured. No one could prophesy the era of tranquil devotion to the arts of peace that was in store for the erstwhile marauders of the Bar, while their own misguided opposition frustrated the earliest efforts of the Colony officers towards their reclamation. Cropping is satisfactory enough: wheat (42·3 per cent.), *toria* (10·3 per cent.) and sugar (2·8 per cent.) are well up to the average, cotton (7·3 per cent.) somewhat below and gram (7·9 per cent.) above it. The percentage of the allotted area annually matured is remarkably high (96 per cent.), and the *barani* area is estimated at 7,283 acres annually. No appreciation of the Rakh Branch would be adequate, if it failed to take account of the advantage it enjoys over other circles in the matter of rainfall, or of the precision with which the canal here performs its functions. *Chahi* cultivation is practically out of the question, because the depth of the water-table is 60-80 feet below the surface.

Upon these and kindred aspects of the Rakh Branch assessment much has already appeared in the body of this report, and it is not necessary to recapitulate the facts and inferences marshalled in paragraphs 166, 167 and 191. The circle, after 20 years of nominal assessment, had no right to expect any further deviation in its favour from settled revenue policy, and the *nahri* revenue rate (Rs. 4-9-0) represents a full and fair assessment. This rich and populous circle, with its abundance of live-stock and labour, had long ago reached the fullness of maturity. The same could not be said of the other circles, which were accordingly treated with studied liberality. The essential moderation of the half net assets estimate has already been demonstrated. The revenue rate fell short of that estimate by 26 per cent. More expressive still is the analogy from cash rents. In 1911-12 no less than 36,242 acres were leased in this way on the Rakh Branch at an average competition rental of Rs. 1-4-9-0²/₃ per acre. That would result in a half assets rate of Rs. 7-4-6¹/₃, yet the revenue rate actually imposed was only 63 per cent. of this sum. It is upon these considerations, and such as these, that the Rakh Branch assessment rests for its defence, if defence were needed.

G.-THE EXTENSIONS AND PROPRIETARY VILLAGES.

199. The Extensions are six in number, varying as to size and comprising in all 113 *mauzas*. As their name and situation on the fringes of the Colony imply, they were the latest founded of the assessment circles. But for the fortuitous circumstance of their combination for assessment purposes, they possess little in common and are best considered separately. Even as regards the assessment, there is no great uniformity. The classification of *nahri* land followed the scheme of neighbouring circles : thus for the Bhangu Extension, which marches with Jhang Branch circle III, the schedule of rates there obtaining was utilized. The remaining Extensions were in this respect regarded as belonging to Gugera Branch circle II. As regards the date of imposition, each Extension is allowed a clear 10 years of concession rates, being thereafter treated as part and parcel of its neighbour circle. These matters

Introductory.

the Colony imply, they were the latest founded of the assessment circles. But for the fortuitous circumstance of their combination for assessment purposes,

TRIBAL DISTRIBUTION, EXTENSIONS AND PROPRIETARY VILLAGES.

Percentage
of whole
circle.

Immigrant (19·8 per cent.)—

Pathans, Awans	...	...	5·72
Jat Musalmans	...	...	3·77
Rajput Musalmans	...	...	3·24
Others	...	...	7·07

Indigenous (80·2 per cent.)—

Hitharis - Rajput Musalman	...	...	9·25
Do. Sayyad	...	...	5·4
Do. Arora	...	...	3·55
Do. Others	...	...	8·93
Janglis - Kharral	...	...	13·35
Do. Watta	...	...	6·56
Do. Others	...	...	25·66
Balochis	...	...	7·5

have already been set forth in paragraphs 173 and 191. Interspersed among the blocks of Extension *mauzas* lie 58 Proprietary *mauzas* of the Lyallpur district. In the case of these *mauzas* procedure as regards the distribution of the *nahri* rate was identical with that approved for the Extensions, and the Gugera Branch circle II classification was accordingly adopted. The old assessment had long since expired here and the temporary arrangements made in place of it had no definite currency: the date of the new assessment was therefore arbitrarily fixed at *kharif* 1914 and the term of settlement will correspond with that of Gugera Branch circle II. Beyond these 58 *mauzas* no proprietary villages are included in the Chenab Colony assessment. The immigrant population is naturally not large, in fact only 19·8 per cent. of the whole. The Proprietary villages are of course entirely indigenous, and the Extensions, for reasons which will appear below, nearly so. What immigrants there are do not strike the observer as very lively colonists. Musalman Jats, mainly from Gujrat, occupy 3·77 per cent., Rajputs 3·24 per cent., of whom the majority are Sialkotis; Pathans and Awans (from Mianwali), with a sprinkling of Sikhs and Arains, practically complete the list. The Hitharis hold 27·13 per cent.—this one would expect from the situation of the *mauzas* in the riverain: Rajputs of all sorts, Sayyads, Qureshis and Aroras compose the bulk of them. Among the Janglis, Kharrals and Wattus lead, followed by a host of lesser tribesmen. Balochis, to the extent of 7·5 per cent. of the circle, received land on service terms in the Bahlak Extension. The tract is not otherwise remarkable. Soil is mainly *maira* (88 per cent.), and the proportion of *rohi* (2·69 per cent.) is fair, but 7·97 per cent. *kallarathi* betrays its weakness at once. Railways are nowhere very far distant; communication by road is, however, indifferent—the country is very uneven in the vicinity of the Deg and Ravi. The market towns of Kamalia, Nankana, Jaranwala, Tandlianwala and Toba Tek Singh supply the commercial needs of these *mauzas*, which are by no means all conveniently located in this respect. In the ensuing paragraphs the Extensions and Proprietary villages are further described *seriatim*: if at seemingly unnecessary length, it will be remembered that no assessment report was prepared for these areas and the sole record of their reassessment, in itself a more intricate affair than any other circle assessment, is contained in these pages.

200. The revenue rate sanctioned by Government for the Extensions				was Rs. 3-0-0: as announced it
Re-assessment of the Extensions.				amounted to Rs. 3-0-7. The 10 years
of concession rates, taken in conjunction with the wide range of differentiat-				ion—for the merits and defects of each Extension were scrupulously weighed
at assessment—should ensure its collection without the least difficulty. That				the Extensions are not yet fully devel-
PRINCIPAL STATISTICS, EXTENSIONS.				oped is obvious: population is some-
Number of <i>mauzas</i>	...	...	113	what sparse: the area matured is not
Population (1911)	...	...	59,480	what it should be: much more <i>chahi</i>
Total area	...	...	200,443 acres.	and <i>sailab</i> is possible than the average
Allotted area	...	...	128,026 "	of 376 and 228 acres respectively under
Matured area (average of 5 years)	...	...	109,373 "	these heads: peasants occupy 81·1 per
Proportion of matured to allotted area	...	...	85 per cent.	cent. of the area allotted, yet only 43
Revenue rate (<i>nahri</i> flow)	...	Rs.	3-0-7	per cent. is <i>khudkasht</i> —this is the
Total new demand	...	...	3,21,034	Hithari at his worst. On the other
Dates of imposition.	Killianwala	...	<i>Kharif</i> , 1913	hand soil and water conditions are often
	Nahra	...	" 1913	extremely favourable, and crop sta-
	Nupewala	...	" 1913	tistics quite satisfactory—cotton 13·6
	Bahlak	...	" 1914	per cent., <i>toria</i> 11·4 per cent., wheat
	Bhangu	...	" 1915	42·2 per cent., fodder 18·2 per cent.
	Dangali	...	" 1916	Fodder is no doubt in excess, but with
rate took cognizance of all those circumstances as well as the pitch of the				river <i>belas</i> conveniently near and waste
				land abundant cattle-breeding is more
				attractive here than elsewhere, and pro-
				bably more lucrative also. The revenue

assessment in the adjoining circle, Gugera Branch II: so regarded, it should require no further explanation.

201. The Dangali Extension comprises 13 *mauzas*. Grantees are mostly large holders on camel service terms together with a few capitalists. There are some admirable *abadis* and soil is of unusual excellence. The distributary has been lately fitted with Kennedy's module and the people complain of shortage in supply. All that has really been done is to equalize distribution on a scientific basis, taking into consideration the high level of the water-table in this region and its proximity to the Ravi Khadir. The *dhaya* crosses the Dangali tract and divides it into two distinct portions. The Irrigation department discriminates in the matter of supply between the upper and lower portion; more water can safely be poured on to the higher land, and the permissible limit consequently varies from 75 per cent. to 50 per cent., though this standard is exceeded in practice. However, there is nothing in all this to detract from the capacity of the Dangali grantees to pay a substantial return to Government. Rupees 3-4-1 was the revenue rate and it comes into effect from *kharif* 1916.

202. The Nahra Extension is a block of 16 *mauzas* at the common boundary of the Sharaqpur, Khangah Dogran and Jaranwala tahsils. Soil is uneven as to command and slightly inferior to Dangali, but there are many low-lying tracts and depressions, which yield crops of the first quality, the water-supply is good and in Nankana the inhabitants have a very convenient market. Grantees are a motley crew, mostly Awans, Sayyads, Quroshis and Pathans from Mianwali with a leavening of Sialkot Jats and Rajputs—not model colonists, but well able under the easy conditions here prevailing to make a substantial livelihood. The revenue rate for the Nahra Extension was Rs. 3-3-4.

203. The Nupewala *mauzas* only number 4, allotted to Janglis and for the most part well to do. Soil and water-supply are both satisfactory and the rate (Rs. 3-1-5) moderate enough.

204. With 32 *mauzas* the Bahlak Extension is first as regards size. It is in two separate pieces, which bear very different characters: for whereas the *mauzas* of the head reaches, chiefly allotted to camel grantees, have nearly all excellent soil and an air of prosperity, the lower tract is noticeably inferior. The prevalence of the *kallar* evil in these latter *mauzas* and measures taken for its cure are described in paragraph 110. Conditions naturally adverse are enhanced by the unsatisfactory character of the grantees—Bhatti, Khichi, Sial, Wattu and Chaddhar Hitharis for the most part, whose original homes are near enough to prevent permanent settlement. However, even here there has been much improvement of late and Rs. 3-0-11 is by no means too high for the whole Extension.

205. The Killianwala Extension is a compact and level block of 19 villages, very similar in quality and constitution, except at the extreme tail. Grantees are practically all Montgomery Hitharis—Kharral, Jat Sikh, Arora, Baloch, Sayyad, Sial, Bhatti, Wattu, Kathia—with land elsewhere. This and the fact that most of them only received very small allotments has proved a serious drawback to the development of the tract. Markets are also rather remote. On the other hand cultivation is very fair, soil good, water supply adequate, and the grants untrammelled by camel service conditions. The revenue rate imposed (Rs. 2-15-11) probably errs on the side of leniency.

206. The Bhangu, comprising 29 *mauzas*, is the least prosperous of the Extensions. Soil is generally inferior, though there are good areas, and *rappar* flats intervening between sandhills are a frequent feature of the landscape. Even with ample grants and a liberal admixture of Jats and Arains from

Gujrat, Lahore, Hoshiarpur and Gurdaspur progress is slow. The main body of the colonists are Jhang Hitharis—Sial, Arora, Sayyad, Khatri, Sipra, to mention only a few of the tribes represented—whose old homes are close by and form an irresistible attraction. The *abadis* are mostly occupied by tenants. Water supply has much improved of late and the revenue rate (Rs. 2-13-6), not to be imposed till *kharif* 1915, adequately meets the situation. The uneven nature of the Bhangu country required and secured in respect of this Extension the fullest play for the principle of differentiation: depressions (locally known as *budhs*), containing soil of the highest quality, sometimes lay alongside the most unpromising lands: all which peculiar local conditions are duly reflected, where they occur, in the distribution of the revenue rate.

Principal statistics, Proprietary villages.

LIVE-STOCK AND PLOUGHS.				Number of <i>mauzas</i>			58
Year of enumeration.		1904.	1914.	Population (1901)	...	...	14,510
				Ditto (1911)	...	...	26,687
Bulls and bullocks	...	2,850	5,570	Total area	...	...	81,464 acres.
Cows	...	3,439	5,483	Cultivated area	...	...	38,203 „
Male buffaloes	...	865	1,258	Matured area (average of 5 years)	...	...	26,989 „
Cow buffaloes	...	1,565	6,403	Proportion of matured to cultivated area.	...	...	71 per cent.
Young stock	...	2,569	5,247	Revenue rate (<i>nahri</i> flow)	...	...	Rs. 2-9-3
Sheep	...	4,306	8,067	Total new demand	...	...	„ 58,710
Goats	...	11,531	5,702	Date of imposition	...	...	<i>Kharif</i> , 1914
Horses and ponies	...	416	1,452				
Donkeys	...	1,019	1,979				
Camels	...	1,496	804				
Ploughs	...	1,371	3,017				

207. The 58 Proprietary villages, with an average area annually matured of 26,989 acres only, are financially of little consequence, but present many features of interest. Only 34 of the *mauzas* are irrigated from the Canal and the permissible area, elsewhere 75 per cent., is here only 50 per cent. There was good reason for this, namely, the desire to give preferential treatment to Crown waste, which admitted of closer settlement, a reluctance to place too liberal a supply of canal water at the disposal of cultivators without experience in the use of it, the existence of irrigational facilities other than canals, the fact of the *mauzas* being situated in areas where the proximity of the water-table to the surface indicated potential water-logging. The areas annually matured, other than *nahri*, in these *mauzas* are as follows: *barani* 816, *sailab* 3,808, *chahi* 2,281, *abi* 500 acres. These figures argue a certain independence of external aid in the form of canal water. Still, prior to the advent of the Canal, they were ill-conditioned *mauzas* and they owe their present improved circumstances to the Canal almost as much as the Colony *mauzas*, from which they are now hardly distinguishable, having been spared, moreover, much of the outlay in money and labour, which was necessary to establish the Colony *mauzas*. How phenomenal that improvement has been will be apparent from a survey of the statistics shown at the head of this paragraph, which well illustrate what canal irrigation may mean to a depressed tract. Cultivated areas are generally of excellent quality as regards soil, and cultivation is good enough, though after the unskilled Hithari fashion. Principal crop statistics are as follows:—cotton 9·6 per cent., fodder 20·5 per cent., gram 10·4 per cent., *toria* 8·5 per cent., wheat 36·2. The popularity of gram is due to the success with which this crop is raised on inundated riparian lands: fodder is grown in connection with the breeding of cattle, which the situation of these *mauzas* naturally fosters. The

Proprietary villages, in a word, are fully equal to the Rs. 3 revenue rate, sanctioned by Government, were it not that their schedule of occupier's rates is higher, by 8 annas, than the Colony schedule. This peculiarity is fully explained in paragraphs 60 and 170. The reduction of the rate to Rs. 2-9-3 was intended to mark this difference in the charges for water.

CHAPTER VIII.—Survey and Record.

208. It is obvious that colonization must follow, and not precede, canal construction and the alignment of water-courses. Village boundaries in the Chenab Colony were accordingly made to coincide with irrigation limits, which the detailed surveys of the canal engineers had enabled them to determine. Their contoured plans showed the lands commanded by each watercourse system: so that to apportion them into *mauzas* was a natural and easy transition. The demarcation of the entire tract into squares followed in due course. The squares were laid by the Revenue staff upon a base line furnished by the Irrigation department, and there was at first an unnecessary and confusing multiplication of survey bases. The whole of the Gugera Branch was, however, with the exception of some scattered *mauzas*, surveyed upon a single base line. The square was the original limit of allotment: its sides measured 200 *karams* (or 1,100 feet) each: in extent it amounted to 27.78 acres. That at least was its theoretical area: in practice a considerable margin of error declared itself, as the colonization staff found, when they came to begin the work of measurement. The area of each square was then ascertained afresh and found, in the majority of cases, to be no square at all, but a quadrilateral with a varying superficial content.

209. The square system did duty well enough at first: but before long it was evident that the amorphous fields, which the colonists carved for themselves out of the squares, could never form the basis of a satisfactory crop assessment. These misshapen areas, with their ever-changing boundaries, presented, so far as the *patwari* was concerned, not only a standing invitation to error and incompetence but a chronic opening for fraud or collusion. The normal processes of survey were therefore reversed: the map was drawn first and the colonist required to lay out his fields in accordance therewith. This bold and ingenious scheme, to which the name of *killabandi* was applied, owes its inception to Captain Popham Young in 1894 and now forms the basic principle of every canal colonization scheme. The square was divided into 25 plots of equal size, called, from the peg used to mark the points of intersection of their sides, *killas*. These plots were themselves square, with sides of 40 *karams* (220 feet) and an area of 8 *kanals* 18 *marlas* each. In Colony villages the *killas* in a square were numbered from 1 to 25: in Proprietary villages all the *killas* in a canal *chak* (or outlet area) were numbered serially.

210. The *killa* now replaced the square as the unit of allotment. The system was at first used only in Colony villages. Presently, as its advantages began to be appreciated, it spread to the proprietary villages also. There was, as might be expected, a transitional period, during which public opinion took stock of the new scheme and considered its probable effect on their private interests. The popularity of *killabandi* is, however, now universally assured, and the entire area within the irrigation boundary of the Lower Chenab Canal, included in this settlement, is demarcated into *killas*. The convenience of the system, as a corollary to canal irrigation, is almost too obvious to need description. Roads and watercourses usually follow the square boundaries: the function of the *killas* is to facilitate the distribution of water within holdings and above all to simplify crop assessment. *Killabandi* is a permanent survey and dispenses with the necessity for further measurements: all that is required is to maintain it in proper order. Crop inspection by *patwaris* is made easier thereby, and its supervision by controlling officers more effectual. Boundary disputes, so often instigated by *patwaris* for their own purposes, are a thing of the past. Lastly, every *zamindar* knows the number of *killas*

he owns and is consequently in a position to check the revenue demands made upon him with very little effort.

211. Remeasurement was the first step towards the compilation of a record of rights. In the Colony it was of unusual importance as forming the basis of all subsequent assessments. The accuracy of the original survey was at first assumed, and even when errors became apparent, no attempt was made in the field map (*shajra kishwar*) to depict squares and *killas* as other than perfect units. The length of *killa* boundaries was, however, indicated if it amounted to more or less than 40 *karams*, and in that way mistakes in the calculation of areas were avoided. In 1905 this rather unscientific method of treatment was abandoned. New base lines were adopted, and actual conditions faithfully delineated on the field map. No very definite programme was followed during the process of remeasurement; the work was generally started about five years after allotment and completed by the time each circle became ripe for reassessment.

212. The *fons et origo* of all written records is the allotment file (*misl taqsim*), which contains the original orders together with every subsequent amendment and variation. Upon this motley compilation the standing record of rights was founded. Naturally, the degree of fixity attained in the holdings had to be taken into consideration. So many changes usually took place between a tenant's first entry upon his holding and the expiry of his probationary period, that the grant frequently emerged very different from its initial state, through the agency of exchanges, remeasurement and what not. The idea of building up a record of rights at the inchoate stage was early discarded and the preparation of *jamabandis* postponed until the lapse of the five years' interval required before the acquisition of occupancy rights. There were some other documents, besides the *misl taqsim*, employed in the drafting of the record of rights: for instance, the tenancy register (*register muzariyat*) prescribed by section 5, Act 3 of 1893, and the abstract of holdings (*khatauni*) containing the names of all grantees with the area of their allotments and the initial demands due and paid in respect of each. The first of these was intended to serve as a title deed, but its maintenance in the manner contemplated by the Act proved impracticable. For the reasons given above tenants could not signify acceptance of grants till their final form had been determined upon; so, by an inversion of the prescribed procedure, the *register muzariyat* generally remained incomplete till the record of rights had been drawn up.

The record of rights in allotted land.

213. The contents of the record of rights for a Colony estate are as follows:—

- (1) Preliminary proceeding (*robkar*).
- (2) Field map (*shajra kishwar*).
- (3) List of revenue assignments and pensions.
- (4) *Jamabandi* or register of holdings of owners and tenants, showing the fields in each, the revenue for which each owner is responsible, and the rent payable by each tenant.
- (5) The order of the Settlement officer determining the assessment.

The field maps show the watercourses, from which each square is irrigated, and the *jamabandis* the class of soil in each field. The absence of some items, usually included, calls for comment. "Rights in irrigation" there are none. The phrase "*haqq abpashi*", as explained in paragraph 47, is a misnomer. The Irrigation department aim at a certain standard of achievement, but guarantee nothing. The conditions of allotment, read with the Colony Act of 1912, especially Schedule II, define the rights and liabilities of grantees, and render superfluous the *wajib-ul-arz* or administration paper. Since the assessment of land revenue fluctuates by squares, no separate order of distribution by holdings (*bachh*) is necessary: the order determining the assessment contains all the information required in this connection. Wells constructed or repaired

for the purpose of irrigation have been granted certificates of exemption from land revenue assessment in accordance with the rules prescribed in paragraphs 505-508 of the Settlement Manual for a term of years appropriate to each case. It remains only to notice the *pargana* note-books, in which the principal agricultural statistics are entered for each *mauza* together with some account of its development and a copy of the order determining the assessment. These are all written up to date and form, for those in search of succinct information about individual *mauzas*, the most convenient means of obtaining it. Such is, in brief, the existing record of rights in allotted lands. The 58 Proprietary *mauzas* are somewhat differently circumstanced in this respect, and present slight divergences from the standard model—there is a *wajib-ul-arz* and *naksha haqquq chahat* (statement of rights in wells) for each—but these divergences are scarcely significant enough to require further examination.

214. For every village site there exists a record of rights, which generally comprises the following documents :—
The record of rights in village sites.

- (1) Preliminary proceeding.
- (2) Map (*shajra abadi*).
- (3) *Jamabandi*.

Grantees are now permitted to obtain proprietary rights in their residential sites, as well as lands allotted. The abolition of ground rent has at the same time done away with all distinctions of tenure in the areas occupied save that between sites held in proprietary right and the remainder, held as tenants-at-will. The retention of the *jamabandi* for village sites was due as much to a desire on the part of the public, very widely expressed, for documentary evidence of their rights, as to the necessity for safeguarding the interests of Government in the unallotted portions of the *abadi*. The *jamabandi* contains, among other particulars, the following :—(1) *khewat* no., (2) *khatauni* no., i.e. sites within a grantee's compound under the separate occupation of his tenants and dependants, (3) name of owner or occupier, (4) area.

CHAPTER IX.—Miscellaneous.

215. Demand statements for land revenue assessed by the Irrigation department (*vide* paragraph 187) must be forwarded by Executive Engineers to Tahsildars on the following dates :—
Dates for the collection of the new demand.

<i>KHARIF.</i>		<i>RABI.</i>	
<i>Earliest date.</i>	<i>Latest date.</i>	<i>Earliest date.</i>	<i>Latest date.</i>
1st December ...	... 15th December	16th May ...	... 1st June

These are the dates fixed in the case of canal revenue by Standing Order 61 Canals, paragraph 7, land revenue being simultaneously imposed (*vide* Appendix III-A). Tahsildars are required to prepare from the demand statements *bachh* papers, which must be delivered to *lumbardars* not later than January 1st for *kharif* and 15th June for *rabi*.

Bachh papers for land revenue assessed by the Revenue staff (*vide* paragraph 188) must be delivered to *lumbardars* not later than January 1st for *kharif* and June 15th for *rabi* (*vide* Appendix III.-B. III.)

In each case the demand is due as soon as the *bachh* papers are in the hands of the *lumbardars*. Payment into the Treasury must be made not later than February 28th for *kharif* and July 31st for *rabi*. In paragraph 45 of Standing Order no. 31 (Land Revenue Accounts) it is further laid down "that Land Revenue shall be paid to the headman, whose duty it is

to collect it, by the landowner liable for it 10 days before the date fixed for its payment by the headman at the tahsil."

216. The existence of two collateral authorities, each with its hierarchy of subordinates, was long admitted as an evil, which called for speedy mitigation. The Colonies Committee discussed it at length without formulating any definite conclusions. Nor could any real progress be made with its solution as long as the agency of assessment remained undecided. When, however, this charge was laid upon the Irrigation department, for the reasons set forth in paragraph 187, it was at once apparent that some reduction in the Revenue staff, if not its complete amalgamation with the subordinate Canal establishment, was within the realm of practical politics. The more drastic alternative was ruled out by the Simla Committee of 1910—a revenue establishment of some sort was essential for the registration of mutations, preparation of the *jamabandi*, and other miscellaneous duties, but they proposed to relieve the revenue *patwari* of so much of his duties as could, without prejudice to the interests of his department, be performed by his colleague in the Irrigation department. This amounted, in effect, to the inspection of crops, a task of great moment to the Irrigation officers and by them already regularly conducted, for their own purposes, with the utmost precision. An experiment was accordingly initiated in a block of 50 Jhang Branch villages, which were distributed among 13 canal and 3 revenue *patwaris*. It would be hardly relevant to discuss in detail the complicated system of collaboration devised for the two sets of *patwaris*, or to pronounce a final verdict upon a scheme, which has not yet passed the experimental stage. The revenue *patwari* probably has too large a circle: otherwise opinions are at present favourable as to the possibility of harmonious working between the two departments. The crop records, so far from deteriorating in accuracy, have improved in this respect, and the superior canal staff are fully equal to the work of supervision. There are defects, no doubt, to eliminate, but on the whole little to prevent a wider application of the scheme of co-operation.

217. No more than a glance at the map, which accompanies this Report, will suffice to bring home the inconvenience of the present circle arrangements. Their formation, described in paragraphs 2 and 146, was largely fortuitous: they are not geographical or administrative divisions: intercourse between them is easy and intimate, and the differentiation of revenue by circles has been shown to breed or accentuate local rancour. It is to be hoped that the Chenab Colony, covering as it does part of three districts and no less than 8 tahsils, makes its last official appearance as such in this report. Its diffusion over so many administrative areas has added not a little to the difficulties of the Settlement officers. At this moment the boundaries of the Colony districts are again in the melting pot: that, however, is a matter, which must soon be placed upon a permanent footing. I am of opinion that Government will be well advised to direct that the next reassessment be carried out by tahsils, even at some sacrifice of revenue. True, the Rakh Branch tahsils will have to be taken up later than the rest, if my proposals in paragraph 191 are accepted: but, subject also to that acceptance, the settlement of the remainder will expire almost simultaneously. Assessment by tahsils is an established system, and inequalities in the assessment of different tahsils will not be magnified so readily into grievances, as they have been under the current dispensation. Nothing, moreover, would so surely or so effectually weld the Colony area with its neighbour districts as the complete abandonment of the present artificial and anomalous system of circle nomenclature.

218. It will be remembered that the orders determining the new assessment contained a proviso concerning the substitution of a fixed demand at some future time within the provisional term of settlement (*vide* paragraph 192). Efficiency, impartiality and expedition were admitted to be more readily attainable with a fixed assessment; and quite apart from the administrative advantages that might be claimed for the contract system, the deliver-

ance of the rural population from the periodic inquisitions of the subordinate assessing agency, which were an inseparable adjunct to the fluctuating process, was a consummation earnestly desired by Government, despite the loss of revenue involved, in the interests of the people themselves. A fixed assessment throughout the whole Colony was unfortunately, in present circumstances, a counsel of perfection, for reasons already set forth in paragraph 156. Neither the permanence of the water-supply nor the admitted excellence of the system of internal distribution could avail against the formidable obstacles, which prevented the furtherance of the project *in extenso*, namely the absence of a guarantee on the part of the Irrigation department to provide water regularly or indeed at all, and of a module which would enable supplies to be controlled upon a volumetric basis. However, hope was by no means abandoned that the contract system might be tried, experimentally at least, in some selected area, and this hope was eventually justified. We observed, in paragraph 56, the substantial measure of success obtained with Gibb's Modules on the Shahkot distributary. It enabled the Irrigation department to offer a conditional assurance as to the maintenance of supply, which assurance, coupled with the opinion of the cultivators on this distributary, who were believed to regard a reversion to fixed assessments with some favour, rendered the contract system at length practicable. The proposals materialized at a meeting of Irrigation and Revenue officers, held at Simla on July 24th 1913, when the choice of the Shahkot distributary as the scene of the experiment was formally approved. Six tail villages, where water-supply is still somewhat precarious, were excluded from the scope of the new scheme, and two others, which belong to the Gajiana system but supplement their supply from the Shahkot distributary, were omitted altogether. There remained 29 *mauzas* suitable for experiment, lying it is true in two districts, but subject as regards irrigation to uniformity of management, since all lay within the charge of the Sub-Divisional officer at Pucca Dulla. The proposals of the Simla Committee were sanctioned by the Government of India and the contract system is to be initiated with effect from *Rabi* 1915. No more can, therefore, be said at present upon the progress of the experiment, of which the main features are as follows :—

- (i) The experiment is unique in that it contemplates fixation both for land revenue charges and occupier's rate—for it was felt that *zamindars* would derive no great benefit from the contract system, unless applied to water rates as well as land revenue.
- (ii) The Irrigation department undertake to maintain existing conditions as regards supply in the Shahkot distributary, subject to the equitable distribution of the total available supply in the canal.
- (iii) The contract system is to be introduced in the *mauzas* selected for a period of five years only. Thereafter *zamindars* will have the option of reversion to the former system of fluctuation or renewal of the contract. The amount of the fixed assessment will, however, not be raised, except under the following circumstances : (a) at the end of the term of settlement : (b) at any time when the water rates prevailing in neighbouring tracts subject to the fluctuating system are altered.
- (iv) Upon the conclusion of the period of experiment Government also retains the option of reversion to the system of fluctuations.
- (v) The amount of the fixed assessment sanctioned by Government is such as not to exceed the estimated demand at the fluctuating rates.
- (vi) The introduction of the fixed assessment in any *mauza* is subject to its acceptance by the *zamindars* responsible for the greater part of the land revenue paid in the year preceding its imposition.*
- (vii) In addition to the remissions which may be claimed under the ordinary rules applicable to fixed assessments, any *mauza*

* All the 29 *mauzas* voluntarily accepted the fixed assessment.

subject to the contract system shall be entitled to remission of revenue and water rates on the principles governing remissions in the case of widespread calamities (*vide* paragraph 183): for which purpose a single *mauza* on the Shahkot distributary shall be deemed to be a "considerable area".

219. The principle of a fixed assessment both for land revenue and water rates was applied also in the case of Gangapur (no. 591, Gugera Branch), an estate entirely owned in full proprietary right by Rai Bahadur Ganga Ram, C.I.E. This *mauza* belongs to no assessment circle in particular, though it actually adjoins Gugera Branch circle I. It is irrigated almost exclusively by lift from a direct outlet on the main Gugera Branch, for which purpose the owner of the estate installed an elaborate and costly plant at allotment. The *mauza* is of considerable size, since an average area of no less than 2,775 acres is annually matured and the population in 1911 totalled 1,923. The new assessment comes into effect from *Rabi* 1915 and amounts to Rs. 9,000 for land revenue with cesses at 13½ per cent. in addition, and Rs. 5,000 for occupier's rate. It is leviable in two instalments—¾ths at *Rabi*, ¼ths at *Kharif*. The fixed assessment is compulsorily imposed, but after five years the owner is to be allowed an option of reversion to a fluctuating assessment at the rate of Rs. 3-8-0 per acre sown, a similar option being also reserved to Government. If, upon the expiry of five years, the fixed assessment is renewed, the term of settlement will be the same as that for the adjoining circle, Gugera Branch I; but this proviso will not be held to bar the right of Government to fix a longer term for the currency of the new assessment, if at the expiry of five years from initial imposition it should see fit so to do.

220. Despite its extent and duration, this Settlement has been carried out with a very small staff, and the credit for what success has been achieved is due largely to the Readers and Naib Tahsildars attached to it from time to time. Among Settlement Naib Tahsildars the following in particular are worthy of honourable mention:—concerning Chaudri Kesar Ram, now Extra Assistant Settlement Officer at Jullundur, Mr. de Montmorency writes that his notes and record of rights formed an excellent basis for the work of re-assessment: the services of Malik Sultan Mahmud, now Superintendent of the Deputy Commissioner's vernacular office at Dera Ghazi Khan, were equally valuable to Mr. de Montmorency in regard to the collection of material for village notes and the distribution of the new demand: Captain Ferrar recorded his appreciation of Devi Ditta Mal, who remained after the departure of that officer and served me in the same capacity—Devi Ditta Mal is a competent officer, hardworking, conscientious and reliable: Lala Lorinda Ram was with me for nearly two years and lost his health for the time being in the performance of his duty, but not before he had shown that he possessed unfailing patience, industry, and skill in the preparation of Settlement statistics: Mohammad Nawaz Khan is a young man of considerable promise, who came for the last year and proved equal to any of his predecessors. Hans Raj, now Superintendent of the Deputy Commissioner's vernacular office at Muzaffargarh, Pandit Mulk Raj and Qazi Abdur Rahman were the chief occupants of the posts of Reader. Hans Raj and Abdur Rahman were Readers to Captain Ferrar, who desired their services to be commended in this report. P. Mulk Raj worked with each of the Settlement officers at one time or another and was well thought of by all of them. As Reader to me for upwards of three years he came under my notice rather conspicuously, and I can testify to his zeal and intelligence; Mulk Raj combines good abilities with a precise knowledge of Settlement affairs and the peculiar conditions obtaining in the Chenab Colony. There was no duplication of the tahsil staff during these operations, which consequently entailed much extra labour, cheerfully undertaken, upon the Tahsildars of the districts concerned and their subordinates. It is a pleasure in this connection to single out the names of Lala Dharu Lal (Samundri), Mehta Diwan Chand (Lyallpur), Lala Karam Narayan (Toba Tek Singh) and Chaudri Amir Khan (Jaranwala). The Revenue

Assistants of Lyallpur, Khan Sahib Chaudri Sultan Ahmad and afterwards Lala Shanker Dass, placed their experience unreservedly at my disposal, and I was always able to count on the cordial co-operation of Mr. David, Head Clerk of the Deputy Commissioner's office at Lyallpur. Most of these officers have already obtained well-merited promotion. To all and sundry the Settlement officers wish to express their indebtedness.

221. I have also to record my sense of obligation for many services of a personal and unofficial nature in the preparation of this report. Chapter II could not have been written without the assistance of Mr. F. T. Bates, Superintending Engineer of the Lower Chenab Canal, who supplied me with much of the material and corrected it in its final state. Mr. W. Roberts, of the Agricultural College, Lyallpur, was kind enough to read through a large part of the chapter on Agricultural Conditions, for which he had already furnished much useful information. Colonel John Farmer, Chief Superintendent, Civil Veterinary department, Punjab, did the same for the section on Cattle, and Captain C. E. M. Mayne, of the Army Remount department, Chenab Colony circle, for the passage on Horses and Mules. Rai Sahib Sewak Ram, Honorary Magistrate, of Gangapur, provided me with an interesting note on agricultural castes, which helped me considerably in the compilation of Chapter III. The names of other gentlemen, to whom my acknowledgments are no less due, appear in the text. Of Government publications, utilized to the same end, the name is legion, and I cannot attempt to recount them. The assessment reports of my predecessors in office, Mr. de Montmorency and Captain Ferrar, with their notes and official correspondence, stand in rather a different category: from these I have so continuously and so freely borrowed—I had almost said plagiarized—that I am impelled to make special mention of them. Without their aid this report would have been a sorry production, and what merit it may possess belongs as much to these gentlemen as to the actual author.

222. The only matter, upon which specific orders are required, is the term of Settlement discussed in paragraph 191. But the attention of Government is invited to paragraph 217 upon future assessment by tahsils.

सत्यमेव जयते

B. H. DOBSON.

1st June 1915.

GLOSSARY OF VERNACULAR TERMS.

<i>Vernacular.</i>	<i>English.</i>
Abadi	... Village site.
Abadkar	... Colonist.
Abi	... Watered by lift from rivers, ponds or creeks.
Abiana	... Water-rate, occupier's rate—as levied by the Irrigation department.
Ahata	... Compound in village site.
Ak	... A shrub (<i>calotropis gigantea</i>).
Arthri	... An agricultural labourer, generally of sweeper caste, receiving payment in kind.
Bachh	... Distribution of land revenue over holdings.
Bajra	... Bulrush millet (<i>pennisetum typhoides</i>).
Bannia	... Village shopkeeper or money-lender.
Banjar	... Waste.
Bar	... Table land between two rivers.
Barani	... Watered by rainfall.
Batai	... Rent taken by division of crops.
Bathu	... A weed (<i>chenopodium album</i>).
Bela	... Grazing land near a river bed.
Belua	... Mill for pressing sugarcane.
Ber	... A fruit tree (<i>zizyphus jujuba</i>).
Bhishti	... Water-carrier (Musalman).
Bhusa	... Straw.
Budh	... Creek, depression, old river bed.
Chahi	... Watered from a well.
Chahi-nahri	... Irrigated both from well and canal.
Chahwari	... Appertaining to wells.
Chak	... A block of land, a Colony village.
Chakbandi	... Demarcation of <i>mauzas</i> into irrigation blocks.
Chamar	... Worker in leather.
Charagah	... Unallotted portion of a village reserved for grazing.
Chari	... <i>Jowar</i> grown for fodder.
Caandri	... Headman of camel service grantees.
Chhatta	... Broadcast sowing.
Chhinbar	... A grass.
China	... A small millet (<i>panicum miliaceum</i>).
Chuhra	... Sweeper (Hindu).
Chuhla	... Earthen fire place.
Chunai	... (Cotton) picking.
Daryai	... A weed.
Datri	... Sickle.
Deorhi	... Covered gateway.
Dharmasala, dharmasalia	... A Sikh temple, a guardian of the same.
Dharwai	... Weighman.
Dhaura	... A variety of sugarcane.
Dhaya	... River bank.
Dofasli	... Double cropped.
Faqir	... Religious mendicant (Musalman).
Fard bachh	... List showing distribution of land revenue.
Fasl	... Crop.
Fauji	... Military.
Fahrist kharaba	... List of failed crops.
Ghairmumkin	... Unculturable.
Ghi	... Clarified butter.
Girdawari	... Crop inspection.
Guala	... Milk seller.

<i>Vernacular.</i>	<i>English.</i>
Gumashta	... A grain dealer's agent.
Gur	... Consolidated sugarcane juice.
Gwara	... A pulse (<i>cyamopsis psoralioides</i>).
Hadd abpashi	... Irrigation boundary.
Hal	... Plough.
Haqq abpashi	... Area proposed for irrigation (popular and erroneous designation).
Hitbar, Hithari	... Lowland, riverain ; inhabitant of the same.
Inam	... Cash allowance for services rendered.
Inamdar	... Holder of an <i>inam</i> .
Jamabandi	... Village register of owners, holdings, tenants, rent and revenue.
Jandra	... A hand rake.
Jangli	... Aboriginal nomad grazier.
Jawi	... Oat (<i>avena sativa</i>).
Jech Doab	... Country between Jhelum and Chenab rivers.
Jhallari	... Watered from a canal by lift.
Jand	... A tree (<i>prosopis spicigera</i>).
Jhinwar	... Water-carrier (Hindu).
Jhok	... Village occupied by camelmen.
Jinswar	... Abstract crop return.
Jowar	... Great millet (<i>sorghum vulgare</i>).
Kahu	... A variety of sugarcane.
Kallar, kallarathi	... Saltpetre ; impregnated with saltpetre, but culturable.
Kamin	... A village menial.
Kangni	... Italian millet (<i>setaria italica</i>).
Kanungo	... Revenue official who supervises the work of <i>palwaris</i> .
Karam	... A linear measure equal to $5\frac{1}{2}$ feet.
Karaya teh zamin	... Ground rent.
Karil	... A leafless shrub (<i>capparis aphylla</i>).
Kasht barani	... Rainfall cultivation.
Katha	... A variety of sugarcane.
Kera	... Process of sowing by hand in the furrow behind the plough.
Khadir	... Riverain tract.
Khali	... Uncultivated.
Kharaba	... Portion of crop which has failed to come to maturity.
Kharif	... Autumn harvest.
Khasra shudkar	... Record of irrigation.
Khasra girdawari	... Crop inspection register.
Khata	... Holding.
Khatauni	... List of holdings with names of owners or tenants.
Khavi, Kheo	... A grass (<i>andropogon schænanthus</i>).
Khudkasht	... Cultivated by owner or Government tenant in person.
Khush-haisiyati	... Owner's rate, (canal) water advantage rate.
Kiari	... Sub-division of a <i>killa</i> for convenience in irrigation.
Kiaribandi	... Process of dividing <i>killas</i> into <i>kiaris</i> .
Kikar	... A tree (<i>acacia arabica</i>).
Killa	... Area equal to 1 acre 0 kanal 18 marlas : one twenty-fifth of a square.
Killabandi	... Survey by <i>killas</i> .
Kumhar	... Potter.
Lambh	... A grass.

Vernacular.	English.
Lana	... A shrub—salt bush (<i>suaeda fruticosa</i>).
Lawa	... Reaper.
Lohar	... Blacksmith.
Lumbardar	... Village headman.
Machhi	... Water carrier (Musalman).
Madal	... A small millet (<i>eleusine corocana</i>).
Mahfuza nala	... Reserved drainage.
Mainan	... A small leguminous fodder plant (<i>medicago denticulata</i>).
Maira	... Light loam.
Malba	... Fund for common village expenses.
Malikana	... Fee paid in recognition of proprietary title.
Mallha	... A prickly shrub (<i>zizyphus numularia</i>).
Mandi	... Market town.
Marla	... Area equal to $\frac{1}{160}$ th of an acre.
Mash	... A pulse (<i>phaseolus mungo</i>).
Massar	... Lentil (<i>erum lens</i>).
Maund	... A measure of weight equal to 82 $\frac{2}{7}$ lbs.
Manza	... A Colony estate or village.
Metha	... A variety of sugarcane.
Methra	... A fodder crop (<i>trigonella fennum græcum</i>).
Mian masjid	... Guardian of a mosque.
Milan ragha	... Area statement.
Misl taqsim	... Allotment file.
Missi	... Fine clay soil with an admixture of sand.
Mogha	... Canal watercourse outlet.
Moth	... A pulse (<i>phaseolus acontifolius</i>).
Muharrir	... Clerk.
Mung	... A pulse (<i>phaseolus radiatus</i>).
Munna	... A kind of plough.
Nabad	... Crop which has failed to germinate.
Nahri	... Irrigated from a canal by flow.
Nai	... Barber.
Naib Tahsildar	... The deputy or assistant of a <i>tahsildar</i> .
Naksha haqquq chahat	... Statement of rights in wells.
Nala	... Ravine, river bed.
Nazarana	... Payment made to Government on acquisition of a Colony grant.
Pachotra	... A surcharge on canal and land revenue paid to <i>lumbardars</i> for collection.
Pakhi	... Thatched hut.
Parcha girdawari	... Extract from crop inspection register.
Pargana	... A group of estates.
Patti	... A sub-division of an estate.
Patwari	... A village revenue accountant or registrar.
Phog	... A shrub.
Piazi	... A weed with onion-like leaves above ground (<i>asphodelus fistulosus</i>).
Pilwahn	... A grass (<i>andropogon pertusus</i>).
Poli	... Wild safflower (<i>carthamus oxyacantha</i>).
Ponda	... A variety of sugarcane.
Pora	... Process of sowing into the plough furrow through a tube attached to the plough.
Rabi	... Spring harvest.
Rahna	... A settlement of nomad graziers.
Rais	... A capitalist grantee.
Rappar	... A thin layer of loam over sand.
Raqba abpashi mujawiza	... Area proposed for irrigation (official and correct designation).

<i>Vernacular.</i>	<i>English.</i>
Rarri	... Hard soil.
Rauni	... Watering before sowing.
Rawan	... A pulse (<i>vigna catjang</i>).
Rechna Doab	... Country between Ravi and Chenab rivers.
Register muzariat	... Tenancy register.
Retli	... Sandy.
Rohi	... Stiff soil containing clay.
Sailab	... Watered by river flood.
San	... Hemp (<i>crotolaria juncea</i>).
Sanji	... An agricultural labourer, generally of superior caste, receiving payment in kind.
Saukukra	... A plant like jute, from which fibre is extracted. (<i>hibiscus cannabinus</i>).
Saunukha	... A small millet (<i>panicum frumentaceum</i>).
Sawank	... A small millet (<i>panicum colonum</i>).
Sarbrah	... Agent, substitute.
Sarshaf	... Indian rape (<i>brassica campestris</i> , var. <i>glauca</i>).
Sarwan	... A camel attendant.
Senji	... A leguminous fodder crop (<i>melilotus parviflora</i>).
Ser	... A measure of weight equal to $2\frac{2}{3}$ lbs.
Shajra	... Map, plan.
Shajra abadi	... Village site plan.
Shajra kishtwar	... Village field map.
Shajra nash	... Genealogical tree.
Shisham	... A tree (<i>dalbergia sisso</i>).
Shor	... Impregnated with various salts and unculturable.
Sohaga	... Wooden drag for crushing clods after ploughing.
Sufedposh	... A yeoman grantee.
Surra	... A disease peculiar to camels.
Tahsil, Tahsildar	... Revenue sub-division of a district, official in charge of the same.
Takavi	... Loan by Government, also acreage rate.
Talaf	... (Crop) which has failed soon after germination.
Taraddadi	... Ploughed up for sowing.
Taramira	... An oilseed (<i>eruca sativa</i>).
Tarkhan	... Carpenter.
Tela	... An insect pest, usually the green fly.
Tibbi	... Sandhill.
Tig	... Heap.
Til	... Sesame (<i>Sesamum indicum</i>).
Timi	... Grazing fee or tax.
Toria	... An oil seed (<i>brassica campestris</i> , var. <i>toria</i>).
Udhai	... Winnowing.
Wadh	... Stubble.
Wajib-ul-arz	... Village administration paper; statement of village rights and customs.
Wan	... A jungle tree (<i>salvadora oleoides</i>).
Wari	... Period, during which a square receives its supply of canal water.
Waribandi	... System by which the supply of water to canal branches, distributaries and watercourses is regulated in rotation.
Zail	... A group of villages amalgamated for administrative purposes.
Zaildar	... A local notable appointed to the charge of a <i>zail</i> .
Zakhira	... A village plantation of trees.
Zamindar	... A cultivator, owner or occupier of land.

APPENDICES.



सत्यमेव जयते

APPENDIX I.

Mauzas included in each Assessment Circle with the dates for the imposition of the new demand.

(Total number of mauzas 1,483.)

JHANG BRANCH, CIRCLE I.

(162 mauzas.)

The new assessment was imposed with effect from Rabi, 1911.

<i>Tahsil.</i>	List of villages.	REMARKS.
Lyalpur (109 mauzas) ...	1—9, 16—21, 23—89, 100, 102—124, 467, 471, 472.	
Toba Tek Singh (10 mauzas) ...	90—99.	
Chiniot (43 mauzas) ...	10—15, 22, 101, 125—157, 465, 468.	

JHANG BRANCH, CIRCLE II.

(220 mauzas.)

The new assessment was imposed with effect from Rabi, 1911.

<i>Tahsil.</i>	List of villages.	REMARKS.
Lyalpur (6 mauzas) ...	271—276.	
Toba Tek Singh (98 mauzas) ...	277—373, 470 ...	Towns ... 470 Gojra. 326 Toba Tek Singh.
Jhang (60 mauzas) ...	159—183, 213—220, 230—233, 250—270, 464, 506.	Unallotted ... 178,218 The date fixed for the assessment of mauza 506 is <i>kharif</i> , 1915.
Chiniot (56 mauzas) ...	184—212, 221—229, 234—249, 466, 158 ...	Unallotted ... 466,158.

JHANG BRANCH, CIRCLE III.

(93 mauzas.)

The new assessment was imposed with effect from Rabi, 1911.

<i>Tahsil.</i>	List of villages.	REMARKS.
Toba Tek Singh (61 mauzas) ...	374—403, 405, 407—411, 413—439, 469 ...	Unallotted ... 436, 400, 396, 428. The date fixed for the assessment of mauza 405 is <i>kharif</i> , 1915.
Jhang (26 mauzas) ...	440—463, 475, 476 ...	Unallotted ... 441 The date fixed for the assessment of mauzas 475 and 476 is <i>kharif</i> , 1915.
Shorkot (3 mauzas) ...	406, 404, 412.	

BHANGU EXTENSION.

(29 mauzas.)

The new assessment is to be imposed with effect from Kharif, 1915.

Tahsil.	List of villages.	REMARKS.
Shorkot (29 mauzas) ...	477—505	Unallotted ... 505

GUGERA BRANCH, CIRCLE I.

(273 mauzas.)

The new assessment was imposed with effect from Rabi, 1911.

Tahsil.	List of villages.	REMARKS.
Lyalpur (18 mauzas) ...	76, 78, 79, 81, 83—88, 90—92, 129—133.	
Jaranwala (92 mauzas) ...	21—40, 53—73, 74, 75, 77, 80, 82, 89, 93—128, 232—240.	Town ... Part of 127 Jaranwala.
Samundri (81 mauzas) ...	41—62, 134—143, 165—177, 192, 193, 195—231, 372, 373, 527—531.	The date fixed for the assessment of mauza 372 is <i>kharif</i> , 1914.
Toba Tek Singh (49 mauzas) ...	148—164, 178—183, 189—191, 194, 241—258, 518—521.	
Khaugah Dogran (33 mauzas) ...	1—20, 369—371, 460, 522—526, 532, 537—539.	

GUGERA BRANCH, CIRCLE II.

(267 mauzas.)

The new assessment was imposed with effect from Rabi, 1912.

Tahsil.	List of villages.	REMARKS.
Jaranwala (52 mauzas) ...	144—147, 272—283, 352—357, 362—368, 374—384, 425, 426, 429—436, 450, 534.	Escape ... 534 Buchiana.
Samundri (119 mauzas) ...	885—424, 427, 428, 437—458, 461—511, 514, 516, 533, 535.	Escape ... 535 Rodu Koru. Towns ... 533 Samundri. Part of 411 Tandlianwala.
Toba Tek Singh (96 mauzas) ...	184—188, 259—271, 284—351, 358—361, 512, 513, 515, 517, 536, Kuhl.	Escape ... 536 Bhagat. Unallotted ... 300 The date fixed for the assessment of mauzas Kuhl and 321 is <i>kharif</i> , 1914.

KILLIANWALA EXTENSION.

(19 mauzas.)

The new assessment was imposed with effect from Kharif, 1913.

<i>Tahsil.</i>	List of villages.	REMARKS.
Samundri (19 mauzas) ...	540—558.	

BAHLAK EXTENSION.

(32 mauzas.)

The new assessment was imposed with effect from Kharif, 1914.

<i>Tahsil.</i>	List of villages.	REMARKS.
Samundri (32 mauzas)	592—623.	

NUPEWALA EXTENSION.

(4 mauzas.)

The new assessment was imposed with effect from Kharif, 1913.

<i>Tahsil.</i>	List of villages.	REMARKS.
Jaranwala (4 mauzas) ...	580, 581, 584, 585.	

DANGALI EXTENSION.

(13 mauzas.)

The new assessment is to be imposed with effect from Kharif, 1916.

<i>Tahsil.</i>	List of villages.	REMARKS.
Jaranwala (13 mauzas) ...	582, 583, 624—633, 635	The portion of mauza 630 lying outside the Irrigation boundary will be assessed by the Revenue department.

NAHRA EXTENSION.

(16 mauzas.)

The new assessment was imposed with effect from Kharif, 1913.

<i>Tahsil.</i>	List of villages.	REMARKS.
Jaranwala (16 mauzas) ...	559—571, 586—588	

Mauza 591 (Gangapur) belongs to no particular circle and has received special treatment—(vide para. 219 of report).

RAKH BRANCH.

(296 *mauzas*.)*The new assessment was imposed with effect from Rabi, 1913.*

<i>Tahsil.</i>	List of villages.	REMARKS.
Lyalpur (190 <i>mauzas</i>) ...	47, 52-77, 90-109, 124-137, 139-165, 185-281, 289, 293, 295-297.	Towns ... 212 Lyalpur. 297 Jhumra. Escape ... 293 Sarfattu.
Khangah Dogran (106 <i>mauzas</i>)...	1-46, 48-51, 78-89, 110-123, 166-171, 173-181, 282-287, 290-292, 294, 298, 299.	Towns ... 298 Sangha. 299 Shahkot. Escapes ... 291 Marh. 292 Kotah.

PROPRIETARY VILLAGES.

(58 *mauzas*.)*The new assessment was imposed with effect from Kharif, 1914.*

<i>Tahsil.</i>	List of villages.	REMARKS.
Jaranwala (16 <i>mauzas</i>) ...	<i>Margala, Chahamunna, Pindi Isa, Dana-bad, Kanch, Chak Dulhia, Lundianwala, Chak Lundianwala, Bohutwala, Marchoke, Padhe, Jodhke, Rangpura, Nurpura, Tibbi Jattuan, Saidpura.</i>	<i>Mauzas shown in italics receive irrigation from the Lower Chenab Canal. In these mauzas the Irrigation department is the assessing agency within the irrigation boundary. Outside the irrigation boundary in these mauzas and throughout in all other mauzas the assessment is carried out by the Revenue department.</i>
Samundri (35 <i>mauzas</i>) ...	<i>Thatta Beg, Kac, Jhamra, Garh, Killianwala, Sarwacke, Sial, Pindi Sheikh Musa, Dikadi Killianwala, Shadi, Kot Satti, Dikadi Mehr Shahana, Dikadi Alam Shah, Jalli Fatiana, Khai, Haveli Shah Din Shah, Mehr Shahana, Jalli Tarana, Shiraza, Neka Wasli, Chak Neka Wasli Kalan, Chak Neka Wasli Khurd, Kund Neka Wasli, Alam Shah Khagga, Daddoke, Saikhe, Chah Pipalwala, Chah Samundarwala, Dudhara, Hassoke, Kamohe, Jangal Sarkar, Asalatwala, Wan Raja Dullo, Jori.</i>	
Toba Tek Singh (7 <i>mauzas</i>) ...	<i>Mugneja, Innyat Shah, Lal Isan, Chura Bhojia, Sultan Mahmudwala, Boharwala, Thera.</i>	

APPENDIX II.

A.—Schedule of occupier's rates in Proprietary *mauzas*.

[Applicable to—

- (a) all estates in the Gujranwala district, which were established before the 1st January 1892 ;
- (b) all estates in the Jhang district, which were established before 1st January 1892, except those which were transferred from the Montgomery to the Jhang district by Revenue and Agriculture notification no. 370 of 4th May 1899 and such proprietary wells as now are or may hereafter be included within the boundaries of Colony *mauzas* ;
- (c) all estates in the Gugera and Montgomery tahsils of the Montgomery district, which were established before 1st January 1894.]

Authority.	Class.	Nature of crop.	RAIR PER ACRS.		Per
			Flow.	Lift.	
			Rs. A. P.	Rs. A. P.	
Irrigation Branch notification no. 017 R. I., dated 13th June 1903.	I	Sugarcane, waternuts ...	8 0 0	4 4 0	Crop.
	II	Rice ...	6 12 0	3 10 0	Do.
	III	Orchards, gardens, tobacco, poppy, indigo, drugs, vegetables, melons.	5 8 0	3 0 0	Orchards and gardens per half-year, the rest per crop.
	IV	Cotton, fibres, dyes (other than indigo), oil-seeds, maize and all <i>rabi</i> crops (except gram and <i>masur</i> .)	4 4 0	2 6 0	Crop.
	V	All <i>kharif</i> crops not otherwise specified, and gram and <i>masur</i> .	3 0 0	1 12 0	Do.
Irrigation Branch notification no. 636 R. I., dated 12th May 1913.	VI	Single watering before ploughing, not followed by a canal-irrigated crop in the same or next harvest.	1 12 0	1 2 0	Watering.
		Crops grown on the <i>wadh</i> of a previous crop.	1 12 0	1 2 0	Crop.
	VII	Single watering before ploughing for <i>rabi</i> followed by a <i>rabi</i> crop, to be applicable only to channels selected by the Local Government.	2 4 0	1 6 0	Acre.
Irrigation Branch notification no. 0141 R. I., dated 12th October 1903.	VIII	Grass—			
		For any number of waterings in the <i>kharif</i> season.	1 4 0	0 10 0	Half year.
		For one watering in the <i>rabi</i> season	1 4 0	0 10 0	Do.
		For two or more waterings in the <i>rabi</i> season.	2 8 0	1 4 0	Do.

B.—Schedule of occupier's rates in Colony *mauzas*.

Applicable to estates other than those referred to in notification no. 017 R. I., dated 18th June 1908.]

Authority.	Class.	Nature of crop.	RATE PER ACRE.		Per
			Flow.	Lift.	
Irrigation Branch notification no. 32-I., dated 6th January 1892.	I	Sugarcane	Rs. A. P. 7 8 0	Rs. A. P. 3 12 0	Crop.
	II	Rice	6 4 0	3 2 0	Do.
	III	Orchards, gardens, tobacco, indigo, vegetables, poppy, <i>dhan</i> , <i>sira</i> , <i>sauif</i> , melons.	5 0 0	2 8 0	Orchards and gardens per half year; the rest per crop.
	IV	Cotton, fibres, dyes (other than indigo), oil-seeds, maize and all <i>rabi</i> crops (except gram and <i>masur</i>).	3 12 0	1 14 0	Crop.
	V	All <i>kharif</i> crops not otherwise specified and gram and <i>masur</i> .	2 8 0	1 4 0	Do.
	VI	Single watering before ploughing not followed by a canal-irrigated crop in the same or next harvest.	1 4 0	0 10 0	Watering.
	VII	Crops grown on the <i>wadh</i> of a previous crop.	1 4 0	0 10 0	Crop.
Irrigation Branch notification no. 0141 R. I., dated 12th October 1903, and no. 313 R. I., dated 19th December 1905, and no. 701 R. I., dated 11th December 1907.	VIII	Grass, village plantations in Colony villages and District Board plantations in the Colony—			
		For any number of waterings in <i>kharif</i> season.	1 4 0	0 10 0	Half year.
		For one watering in the <i>rabi</i> season.	1 4 0	0 10 0	Do.
		For two or more waterings in the <i>rabi</i> season.	2 8 0.	1 4 0	Do.

C.—Schedule of rates for water employed otherwise than in irrigation.

[Applicable to all *mauzas* without distinction.]

Authority.	Purpose.	Rate per acre, whether flow or lift.	Per
		Rs. A. P.	
Irrigation Branch notification no. 651-I., dated 5th April 1898.	Brick making and pisce wall building.	0 3 0	100 cubic feet.
	Laying concrete and brick or stone masonry.	0 2 0	Ditto
	Metalling roads	10 0 0	Mile.
	Water supplied in bulk	1 0 0	2,500 cubic feet.
Irrigation Branch notification no. 325 R. I., dated 29th October 1906.	Watering roadside or avenue trees.	2 8 0	Canal mile of 5,000 feet, for <i>kharif</i> season.
		5 0 0	Canal mile of 5,000 feet for <i>rabi</i> season.
Irrigation Branch notification no. 0273 R. I., dated 26th September 1911.	<i>Proviso.</i> —Except within the limits of Civil Stations, Cantonments and Municipalities, no charge will be made for water used in the manufacture of bricks not subsequently burnt in a kiln or for pisce wall building, if taken from a watercourse or tank lawfully supplied from a canal and if such bricks or walls are for buildings owned by cultivators having a share in the watercourse.		

D.—Special provisions applicable to all *mauzas* without distinction.

Authority.	Nature of provision.
Letter 892 R. I., dated 12th May 1911, from the Chief Engineer, Irrigation Works, Punjab, to the Superintending Engineer, Lower Chenab Canal Circle.	Exemption from water-rate for <i>san</i> and indigo crops, when grown solely for green manuring, on the following conditions :— (i) the concession shall have effect for 5 years only from the date on which orders issued. (ii) if not ploughed in before September 15th, full rates scheduled for <i>san</i> and indigo will be charged. (iii) if ploughed in before September 15th and followed by a <i>rabi</i> crop, the rate scheduled for the <i>rabi</i> crop will be charged. (iv) if ploughed in before September 15th but not followed by a <i>rabi</i> crop, the rate scheduled for class VI crops will be charged.
Irrigation Branch notification no. 600 R. I., dated 6th May 1913.	Mixed crops, which have no specific name in the schedule of occupier's rates, shall be assessed at the highest rate leviable on any one of them. Crops grown separately in the same field shall be treated as mixed crops unless the division between them has been clearly marked by a well defined ridge.

E.—Special lower schedule of occupier's rates for selected Colony *mauzas*.

In the case of such Colony *mauzas* as may be specified by the Punjab Government in this behalf the following reduced rates are substituted for the rates sanctioned in Irrigation Branch notification no. 32 I., dated 6th January 1892, (Schedule B above) in respect of classes IV and V :—

Authority.	Class.	Crop.	RATE PER ACRE.		Per
			Flow.	Lift.	
			Rs. A. P.	Rs. A. P.	
Irrigation Branch notification no. 112 R. I., dated 30th January 1912, by authority of section 15, Act VIII of 1873 (Northern India Canal and Drainage Act).	IV	Cotton, fibres, dyes (other than indigo) oil-seeds, maize and all <i>rabi</i> crops except gram and <i>masur</i> .	3 0 0	1 12 0	Crop.
	V	All <i>kharif</i> crops not otherwise specified and gram and <i>masur</i> .	2 0 0	1 4 0	Do.

F.—List of colony *mauzas*, to which the lower schedule (E above) of occupier's rates is applicable.

Authority.	Assessment circle.	<i>Tahsil.</i>	List of <i>mauzas</i> .
Irrigation Branch notification no. 112 R. I., dated 30th January 1912, and no. 0275 R. I., dated 26th August 1912.	Jhang Branch, circle I	Lyallpur ...	107 and half of 25.
		Chiniot ...	129, 136, 137, 141, 144, 145, 150, 154, 156, 157.
	Jhang Branch, circle II.	Toba Tek Singh ...	324, 341, 345, 360, 366, 331, 346, 347, 373.
		Jhang ...	170, 172, 173, 175, 176, 177, 183, 215, 216, 217, 238, 257, 267, 268, 269, 270, 506*.
		Chiniot ...	208, 209, 212, 229, 247, 248, 249.
	Jhang Branch, circle III.	Toba Tek Singh ...	397, 398, 399, 401, 402, 405,* 409, 410, 411, 438, 439, 469, 424.
		Jhang ...	440, 442, 443, 446, 447, 448, 449, 450, 451, 463, 475,* 476*.
		Shorkot ...	406, 412.
	Gugera Branch, circle I.	Jaranwala ...	71, 75 (part), 116.
		Samundri ...	207.
		Toba Tek Singh ...	164, 249.
		Khangah Dogran ...	537, 538, 539.
Irrigation Branch notification no. 99 R. I., dated 22nd January 1913.	Gugera Branch, circle II.	Jaranwala ...	367.
		Samundri ...	501, 502, 503, 504, 506, 516.
		Toba Tek Singh ...	264, 265, 321,* 327, 328, 329, 310, 350, 512, 515.
Irrigation Branch notification no. 0301 R. I., dated 21st September 1914.	Rakh Branch ...	Khangah Dogran ...	11, 12, 13, 26, 30, 31, 34, 49, 122, 286.
		Lyallpur ...	57, 61, 107, 109, 165, 211, 217, 235, 280, 281.
Irrigation Branch notification no. 016 R. I., dated 1st June 1915.	Extensions ...	Samundri ...	557, 558, 597, 613, 618, 619, 621, 622, 623.
		Jaranwala ...	581, 585, 586.
		Shorkot ...	479, 480, 481, 484, 489, 490, 493, 498, 500, 503, 504.

*By authority of Irrigation Branch notification no. 016 R. I., dated 1st June 1915.

APPENDIX III-A.

Rules for the assessment of fluctuating land revenue, *malikana* and cesses within the Irrigation Boundary of the Lower Chenab Canal by officers of the Irrigation department.

[Extracted from Article 161-A of the Irrigation Manual of Orders, Punjab and North-West Frontier Province, addendum no. 19, dated 24th September 1913.]

1. The following orders refer to the assessment of land revenue, owner's rate, *malikana* and cesses by the Canal department and procedure to be adopted in connection therewith.
 2. The Canal department will assess land revenue within the irrigation limits of the Canal, whether the cultivation is *nahri*, *chahi*, *abi*, *barani* or *sailab*, and will allow remissions on all kinds of cultivation according to the rules in force.
 3. Villages situated partly within the irrigation limits of the Canal will be partly or wholly assessed by the Canal officer by special arrangement with the Collector of the district, and the boundary of the canal assessment will be shown on the *shajras* of the villages concerned.
 4. Many canal revenue forms have columns for land revenue &c., and where such columns exist they should be filled in. The canal *shudkar khasra*, form no. 1 (Standard Vernacular form no. 2 B), provides also for the measurement and record of non-canal cultivation and the *khatauni*, form I A (Standard Vernacular form no. 11 D), and *parcha*, form I B (Standard Vernacular form no. 8 E), have columns for land revenue. Canal Procedure Rules, Article no. 161 (2) to (5) and (7), provide for the check, distribution and disposal of these combined bills—*khasras*, *parchas* and *khataunis*. The rules for additions and remissions of canal revenue will apply generally to land revenue so far as forms I, I-A and I-B are concerned.
 5. Each of the sub-heads of land revenue (paragraph 12) will be shown separately in the final abstract of each *khatauni*, as also areas, rates and accounts for *nahri*, *chahi*, *abi*, *sailab* and *barani* cultivation.
 6. In each *khata* of the *khatauni* will be entered the consolidated land revenue, which includes land revenue proper, local rate, *lambardari* fees, owner's rate and *malikana*. Details for *nahri*, *chahi* and *barani* will be shown separately. In the Jhang district a separate *khatauni* is prepared for land revenue on non-canal cultivation.
 7. Similar details will be shown on the *parchas* from which *khataunis* are prepared.
 8. Forms II A (Standard Vernacular form no. 33 E) and III A (Standard Vernacular form no. 33 F) will be prepared and disposed of in the same way and at the same time as the corresponding Canal Revenue forms II and III,—*vide* Article 161 (8) to (10).
 9. When remissions and additions are made to canal revenue, corresponding remissions and additions are as a rule made to land revenue, and forms showing the latter will accompany the former, which latter will also include non-canal cultivation. If the remissions and additions apply only to non-canal cultivation, separate statements will be submitted in proper form.
 10. The Collector will supply the following for the guidance of *patwaris*, *zilladars* and *ahlmads* :—
 - (a) Certified copies of *shajras* (field maps).
 - (b) Papers showing areas, numbers and owners of fields and holdings.
* * * * *
 - (d) Correction slips for *jamabandi* (*fard intiqal*).
 - (e) Rates for land revenue, *malikana*, owner's rate and cesses by villages and correction slips from time to time as changes are sanctioned.
* * * * *
 - (g) Detailed lists of assigned revenue (when necessary).
 - (h) Information concerning exemptions from *malikana* and grants of proprietary right as they occur.
 - (i) Lists of remissions under tenancy rules.
- The Canal department are also supplied with copies of detailed Village Assessment statements in Urdu and assessment orders in English and Urdu.
11. Lists of assigned revenue, *jagirs*, *muafis* &c., will not be maintained by the Canal department and no land revenue remissions on this account will be shown in the bills. The Collector will deal with them on receipt of the *khataunis* and accompanying statements. Sometimes details of assigned revenues are necessary to prepare the *khataunis*: in such cases the Collector will supply details as provided in paragraph 10.

12. *Land revenue*.—The following are the sub-heads of land revenue :—

- (a) Land revenue proper.
 - (b) Owner's rate.
 - (c) *Malikana*.
 - (d) Local rate
 - (e) *Lambardari* fee
- } Cesses.

13. Land revenue rates vary from 12 annas (*barani*) to Rs. 10 (highest *nahri*). Several rates are often found in the same village, where differentiation by squares has been allowed. The assessment is usually on sown areas; remission on failed areas is given in accordance with the rules regulating remissions of occupier's rates.

14. Canal *patwaris*, *zilladars' munshis*, *zilladars* and checking officers will see that the correct land revenue charges and rates are assessed in the *khataunis*.

15. The following are usually exempt from land revenue :—

- (a) Land allotted to Cavalry regiments.
- (b) Land allotted to the Army Remount and other Government departments.
- * * * * * * *
- (d) Double-cropped fields for the second crop in the same harvest.
- (e) Fields not sown and cultivated and self-sown crops such as *maina*.
- (f) Grass lands except those leased out for grazing.
- (g) Fruitless orchards.

16. Fields sown *nahri* and *barani* or *chahi* and *barani* in the same crop will be assessed once at the higher rate.

17. Owner's rate is 8 annas per acre on irrigated land for the first ten years and Re. 1 per acre for subsequent years. Article 161 (23), (24), (41) and (42) deals with this item. In Colony villages owner's rate is not imposed until the lapse of 10 years from allotment and at re-settlement is merged in the land revenue and ceases to exist.

18. *Malikana*.—(1) The following are usually exempt from the payment of *malikana* :—

Land allotted to Cavalry regiments, the Army Remount and other Government departments, proprietary land, and land sold by auction.

(2) Elsewhere the rates for *malikana* are as follows :—

(a) For the first ten years after allotment—

				Rs.	A.	P.	
<i>Nahri</i> cultivation	...	...		0	6	0	per acre.
Other „	...	...		0	2	0	do.

(ii) After ten years—

<i>Nahri</i> cultivation	...	...		0	9	0	per acre.
Other „	...	...		0	3	0	do.

(iii) At re-settlement—

Annas 6 per rupee of land revenue per acre, subject to a maximum of 12 annas, for all classes of cultivation.

(iv) Land allotted to camel-owning tenants and camel *chaudhris* is exempted at re-settlement from the payment of *malikana*, so long as the conditions are maintained, on which such land is held.

19. Cesses include local rate and *lambardari* fees and are chargeable as follows :—

(i) Before re-settlement—

				Rs.	A.	P.	
<i>Nahri</i> cultivation	...	...		0	3	8½	per acre.
Other „	...	...		0	1	2½	do.

(ii) After re-settlement—

13½ per cent. of land revenue for all classes of cultivation.

20. Cesses are levied even when the land revenue is assigned.

21. Cesses are not levied on *malikana*.

APPENDIX III-B.

**Rules for the assessment of fluctuating land revenue and cesses outside the
Irrigation boundary of the Lower Chenab Canal by Revenue officers.**

I.—Introductory.

1. These rules apply only to the *mauzas* or portions of *mauzas* shown in Schedule I. *Mauzas* entirely outside the Irrigation boundary are wholly governed by the rules ; in the case of *mauzas* partially situated outside the Irrigation boundary the rules only apply to the portion of the *mauza* outside the Irrigation boundary.

2. The assessment will be on the area of crops matured throughout, Government dues being remitted on all failed crops. Rates applicable are as follows :—

Class of cultivation.						Land Revenue.	Cesses.
						Rs. A. P.	
<i>Chaki</i>	...	...	...	...	...	1 4 0	} 13½ per cent. of Land Revenue.
<i>Ata</i>	...	...	...	...	...	0 12 0	
<i>Sailab</i>	...	...	...	...	...	1 0 0	
<i>Barani</i>	...	...	...	...	...	0 12 0	

NOTE.—Cultivation watered by lift direct from the Ravi river and Deg nala, or from creeks and pools, is to be classed as *abi*.

3. New masonry wells brought into use during the currency of the settlement are granted certificates of exemption from land revenue charges, valid for a term of years : crops irrigated from such wells during such term are not to be assessed.

4. If, in any field, the crop is less than 25 per cent. of the normal outturn, it is exempt from assessment ; if more than 25 per cent. but less than 50 per cent., the assessment is to be remitted on half its area ; if more than 50 per cent., the full area is to be assessed.

5. If hereafter irrigation from the Lower Chenab Canal be extended to any *mauza* or portion of a *mauza* subject to these rules, the assessment for all classes of cultivation in the area brought within the Irrigation boundary shall be carried out by the Irrigation department.

II.—Crop inspection.

6. Dates for the commencement and completion of crop inspection will be those fixed for the rest of the district, unless otherwise ordered by the Collector.

7. Crops subject to fluctuating assessment under these rules shall have precedence in each *patwari*'s circle as regards inspection over crops assessed by the Irrigation department.

8. The results of the crop inspection will be entered by the *patwari* in the *khasra girdawari* (Schedule II, form A). This register contains entries for one year only ; a new register will be opened annually.

9. On completion of the crop inspection in a proprietary holding, the *patwari* will give to the owner or owners a *parcha* (Schedule II, form B), showing the total area of crops by classes and rates chargeable. *Parchas* for absentee owners will be handed to the *lambardar*, in whose presence all *parchas* should be distributed. A list of *parchas* so distributed should be prepared and signed by the *lambardar*. The signature or thumb impression of every person receiving a *parcha* shall be recorded upon the counterfoil.

10. No entries are to be made by the *patwari* in the *khasra girdawari* or *parcha girdawari* concerning failed areas. If the *patwari* thinks a remission should be given for failed crops in the case of any field, he will enter particulars in a *kharaba* list (Schedule II, form C), which should be written up as the crop inspection proceeds.

11. Every field in the *kharaba* list and any other field, in respect of which a remission for failed crops is claimed, must be inspected by the *field kunungo* ; and 25 per cent. must be inspected by the Tahsildar or Naib Tahsildar. These officers shall also hear objections concerning the crop inspection, and satisfy themselves that it has been properly performed and *parchas* in form B duly distributed.

12. The *field kanungo*, having satisfied himself as to the correctness of the *kharaba* entries and disposed of all oral objections, will fill up columns 9-12 and 16-19 in form A, columns 6-9 in form B and columns 4-8 in form C. with his own hand, setting his signature thereto. Any corrections made in the *patwari's* entries must be similarly attested. *Parchas* in form B will be returned after completion to owners and the final entries explained, if necessary.

13. The work of the inspecting officer being finished, the *patwari* will make up the totals of areas matured and prepare the *jinswar*, which will be entered in the village note-book and thereafter forwarded to the *field kanungo*.

14. The responsibility for the completion in proper form of the crop inspection will rest with the Tahsildar or Naib Tahsildar. But the Revenue Assistant should also check the inspection, himself examining a small proportion of *kharaba* entries and matured areas, in respect of which complaint is made. Corrections ordered by the Revenue Assistant will be made in red ink by the *kanungo*, who will set his signature thereto.

III.—Assessment and collection.

15. After each harvest as soon as the *girdawari* and inspection thereof is complete in his circle, the *patwari* shall prepare from the *khassra girdawari* a *khatauni* by proprietary holdings (Schedule II, form D).

16. After the *khatauni* has been checked, signed, and dated by the *field kanungo*, it shall be submitted not later than 25th November for *khari* and 10th May for *rabi* to the Tahsildar together with an abstract (Schedule II, form E).

17. The Tahsildar will check and sign both *khatauni* and abstract and cause the demand to be entered by the Tahsil *wasil-baqi-nawis* in his *khatauni*. The Tahsildar will then send the *khatauni* and abstract to the Revenue Assistant.

18. The Revenue Assistant will cause the *khatauni* and abstract to be checked by the *sadr kanungo*, thereafter submitting them to the Collector for sanction. Orders having been passed by the Collector and the *sadr wasil-baqi-nawis* having noted the sanctioned demand, the *khatauni* and abstract shall be returned to the tahsil before 10th December for *khari* and 25th May for *rabi* for preparation of the *kistbandi* and recovery of the demand.

19. On receipt of the *khatauni* and abstracts the Tahsildar shall order the *patwari* to prepare the *fard buchh* by *pattis* in the usual form. The *fard buchh* must be completed and delivered to the *lambardar* concerned not less than one month before the date of each harvest instalment.

IV.—Miscellaneous.

20. A tahsil demand statement for the areas subject to these rules shall be prepared by *tahsil office kanungos* from Schedule II., Form E, and a copy despatched to the *sadr kanungo* together with all the village abstracts.

21. The *sadr kanungo*, after checking the tahsil statements by the aid of the village abstracts, shall prepare the statement prescribed for submission to the Financial Commissioner through the Commissioner of the Division, which statement shall be signed by the *sadr wasil-baqi-nawis* after comparison with his records. The *sadr kanungo* shall then forward the statement to the English Office for translation and submission on the due date after each harvest to the Commissioner of the division.

Schedule I.—List of mauzas wholly or partially subject to the Rules.

Tahsil.	Mauzas wholly outside the Irrigation boundary.		Mauzas partly outside the Irrigation boundary.		
Toba Tek Singh.	Magneja Boharwala Sultan Mahmudwala.	Inayat Shah Lal Isan, Thera.	Chura Bhojjan.		
Samundri ...	Jangul Sarkar Jori Chak Kulan Neka Wasli. Chak Khurd Neka Wasli.	Chah Pipalwala Samunderwala Kund Neka Wasli Wan Raja Dullo	Khai Jhamra Kur Killianwala Julli Fatiana Pindi Sheikh Musa.	Thatta Beg Sial Shiraza Alam Shah Khagga Sarwarke Saika	Dadduke. Hassoke. Mehr Shahana. Neka Wasli. Jalli Tarana. Dhudera.
Jaranwala ...	Chak Dulchia Chak Lundianwala Nurpura Rangpura Jodhke	Badhe Tibbi Jattuan Saidpura Chaharmana Bobutwala	Pindi Isa Maryala Harchoke 630 G. B.	Lundianwala. Danabad. Kunal.	

Schedule II.—Form A.

Khasra girdawari for Fluctuating Land Revenue A. D. 19 , Sambat 19 District Tahsil Mauza

Field No.	Name of <i>taryaf</i> , <i>patfi</i> or well.	Name and description of proprietor with last <i>jamabandi</i> No.	Cultivator and <i>khatauni</i> no.	Area.	Class of land according to last <i>girdawari</i> .	Kharif, 19						Rabi, 19						Transfers of rights, name of cultivator, rent, plan and dimensions of field, if necessary.	
						Area cultivated and uncultivated under each class.	Crop and class of cultivation.	Matured.	Failed.	Assessment.	Signature of inspecting officer.	Transfers of rights, name of cultivator, rent, plan and dimensions of field, if necessary.	Area cultivated under each class and uncultivated.	Crop and class of cultivation.	Matured.	Failed.	Assessment.		Signature of inspecting officer.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20

NOTE.—1. Columns 11 and 18—In addition to the revenue rates the scale of remission will be entered in these columns, i.e. "full," "half," or "nil,"—vide paragraph 4 of rules.
2. Columns 9—12 and 16—19 are to be filled up by inspecting officers, not *patwaris*.

Schedule II.—Form B.

Name Harvest <i>Mauza</i>		No. Harvest Year		Parcha girdawari. District Tahsil <i>Mauza</i>															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Date on which <i>parcha</i> was handed to person liable for land revenue.	Signature or thumb mark of person receiving the <i>parcha</i> .	Name of owner.	Name of cultivator.	Area of field.	Area of crops under each class of cultivation.	Matured.	Failed.	Assessment.	Signature of inspecting officer.										

NOTE.—This portion of the form should be retained by the *patwari*.

NOTE.—1. In addition to the revenue rates, the scale of remission should be entered in column 8, i.e. "full," "half," or "nil,"—vide paragraph 4 of rules.
2. Columns 6—9 are to be filled up by inspecting officers, not *patwaris*.
3. The *patwari* will hand this slip to the person liable for land revenue.

Schedule II—Form C.

Fehrist Kharaba.

District	Manza				
Tahsil	Harvest				
1	2	3	4	5	6
Field no.	Crop and class of cultivation.	Area of crop.	Proportion to be allowed as <i>kharaba</i> .	Date of inspection.	Signature of inspecting officer.

NOTES.—1. A separate list will be prepared for each harvest.

2. Columns 4–6 are to be filled up by inspecting officers, not *patwaris*.

Schedule II—Form D.

Khatauni.

District	Village												
Tahsil	Harvest												
1	2	3	4	5	6	7	8	9	10	11	12	13	14
<i>Khewat</i> no.	<i>Khatauni</i> no.	Name of <i>patli</i> and <i>landholders</i> .	Name and description of owner.	Name and description of cultivator.	Field no.	Area measured under each class of cultivation.	Revenue rate.	Demand.	Deduction, if any, on account of exemption certificate.	Balance of revenue due.	Cesses.	Total.	REMARKS.

NOTES.—1. The detail of any area assigned, together with the revenue thereon, shall be entered in red ink.

2. *Khewat* and *khatauni* numbers should be those of the last *jamabandi*.

3. Entries in columns 4 and 5 shall be in accordance with conditions existing at the time of crop inspection; but if a change in ownership has occurred involving a mutation which has not yet received sanction, the old entry will be maintained and the change noted in the remarks column.

4. Entries for extra *rabi* will be made in the *khatauni* for the ensuing *kharij* and the demand amalgamated with the *kharij* demand.

5. Field numbers need not be entered serially in column 6, but may be shown inclusively thus—15 fields nos. 1—15.

Abstract of fluctuating assessment.

Total demand.

APPENDIX III-C.

Form of Fard Bachh to be prepared by patwaris upon the completion of Khataunis.

Fard Bachh		Harvest 19		Mauza		Tahsil				District		
Serial no.	No. of jama bandi holding.	No. of khat-asni.	Name of owner or malguzar.	Share of holding.	Area assessed.	LAND REVENUE.				Occupier's rate.	Total demand.	REMARKS.
						Land revenue proper.	Malikana.	Cesses.	Total			
1	2	3	4	5	6	7	8	9	10	11	12	13

NOTE.—This form is to be employed in the case of land revenue assessed both by canal and revenue officers.

APPENDIX IV.

Principal Gazette Notifications.

Serial no.	No. of notification.	Date.	Contents.
1	192 ...	19th March 1894 ...	Directs the preparation of a record-of-rights for the Rakh and Mian Ali Branches, by authority of section 32, Land Revenue Act, 1887.
2	184 ...	2nd July 1902 ...	As (1) for the Jhang and Gugera Branches.
3	147 A ...	6th February 1906 ...	<p>Invests Mr. G. F. de Montmorency, Colonization officer, with the following powers, to be exercised within the limits of the area irrigated by the Lower Chenab Canal in Jhang, Lyallpur, Gujranwala, Montgomery and Lahore :—</p> <ol style="list-style-type: none"> (1) All the powers of a Collector under the Land Revenue Act, 1887, except Chapter IV. Mr. de Montmorency, in the exercise of these powers, not to be subject to the Collectors of the districts above-mentioned. (2) Power to perform all the functions of a Deputy Commissioner under the Government Tenants Act, III of 1893. (3) All the powers of a Collector under the Punjab Tenancy Act, 1887, with power to hear appeals from the orders of certain Assistant Collectors of the 1st grade and their successors in office. (4) Certain powers under the Code of Criminal Procedure, 1898 : such powers to be exercised in respect of cases connected with colonization.
4	170 ...	13th February 1906...	<p>Invests Mr. H. S. Williamson, Colonization officer, with the following powers, to be exercised within the limits of the area irrigated by the Lower Chenab Canal in Jhang, Lyallpur, Gujranwala, Montgomery and Lahore :—</p> <ol style="list-style-type: none"> (1) as 3 (1). Mr. Williamson, in the exercise of these powers, not to be subject to the Colonization officer. (2) as 3 (2). (3) as 3 (4), omitting the power to try summarily the cases specified in section 260 of the said Code.

APPENDIX IV—CONTINUED.

Serial no.	No. of notification.	Date.	Contents.
5	718 B ...	1st April 1907 ...	<p>Invests Mr. G. F. de Montmorency, Deputy Commissioner, with the following powers to be exercised within the limits of the area irrigated by the Lower Chenab Canal in Jhang, Lyallpur and Montgomery :—</p> <p>As 3 (1), (2), (3), (4).</p>
6	718 C ...	Ditto ...	<p>Invests Mr. H. S. Williamson, Assistant Colonization officer, with the following powers, to be exercised within the limits of the area irrigated by the Lower Chenab Canal in Jhang, Lyallpur and Montgomery ;—</p> <p>(1) as (3) (1).</p> <p>Mr. Williamson, in the exercise of these powers, to be subject to the Deputy Commissioner, Lyallpur.</p> <p>(2), (3) as 4 (2) and (3).</p>
7	2543 A ...	21st December 1907...	Invests Captain M. L. Ferrar, Assistant Colonization officer, with the powers defined in 6.
8	670 G ...	20th April 1909 ...	Invests Captain M. L. Ferrar, Deputy Commissioner, with the powers defined in 5, omitting the power to try summarily the cases specified in section 260 of the Code of Criminal Procedure, 1898.
9	670 II ...	Ditto ...	Invests Mr. J. F. Brewster, Assistant Colonization officer, with the powers defined in 6.
10	1523 E ...	10th December 1909...	As 7.
11	406 ...	14th March 1910 ...	<p>Invests Mr. G. F. de Montmorency, Settlement Officer, Lyallpur, with the following powers, to be exercised within the limits of the area irrigated by the Lower Chenab Canal in Jhang and Lyallpur :—</p> <p>As 3 (1), (2) and (3).</p>

APPENDIX IV—CONCLUDED.

Serial no.	No. of notification.	Date.	Contents.
12	611 C ...	12th May 1911 ...	<p>Invests Mr. B. H. Dobson, Assistant to the Deputy Commissioner, Lyallpur, with the following powers, to be exercised within the limits of the area irrigated by the Lower Chenab Canal in Jhang, Lyallpur and Montgomery :—</p> <p>(1) as 3 (1).</p> <p>Mr. Dobson, in the exercise of these powers, to be subject to the Collectors of Jhang and Lyallpur.</p> <p>(2), (3) as 3 (2) and (4).</p>
13	791 G ...	1st June 1911 ...	<p>Invests Captain M. L. Ferrar, Assistant to the Deputy Commissioner, Lyallpur, with the powers defined in 12, save that in the exercise of (1) he shall not be subject to the Collectors of Lyallpur and Jhang.</p>
14	1321 ...	13th December 1912	<p>Invests Mr. B. H. Dobson, Settlement Officer, Lyallpur, with the following powers under the Colony Act, V of 1912, to be exercised within the limits of the Lyallpur district :—</p> <ol style="list-style-type: none"> (1) Under section 17, to sanction exchanges. (2) Under section 24 (a), to impose a penalty not exceeding Rs. 100 for breach of tenancy conditions. (3) Under section 25, to re-enter and provide compensation if required. (4) Under section 26, to re-enter and compensate for buildings on sites allotted for residential purposes. (5) Under section 32, to re-enter in the case of squatters and trespassers. (6) Under section 33, to authorize complaints. (7) Under section 34, miscellaneous powers under sub-sections (i), (ii) and (iii).